Paper
TRADE JOURNAL

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A reproduction of this incident from the fabulous life of Paul Bunyan—the sixty-sixth of a series—will be sent on request. It will contain no advertising.

Paper TRADE JOURNAL

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NEXT WEEK—*New Trend in Merchandising means more markets in packaging materials. Will it be paper and paperboard? Are you, your sales force, your technical men ready for this retail revolution? Pre-packaging could mean the biggest boost in paper consumption yet.*

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REMEMBER
THESE DATES

OCT. 20-24: 40th National Safety Congress and Exposition at Conrad Hilton, Congress, Morrison and Sheraton Hotels.

OCT. 23: Miami Valley Div., of the American Pulp and Paper Mill Superintendents Assn., American Legion, Middletown, Ohio.

OCT. 27-28: Ninth Fibrous Agricultural Residues Conference, Northern Regional Research Laboratory, Peoria, Ill.

OCT. 30 to NOV. 1: National Paper Trade Assn., Edgewater Beach Hotel, Chicago, Ill.

NOV. 5-6: TAPPI Plastics Conference, Marshall Hall, College of Forestry, State University of New York.

NOV. 12-14: Alkaline Pulping Conference, Technical Assn. of the Pulp and Paper Industry, Battle House, Mobile, Ala.

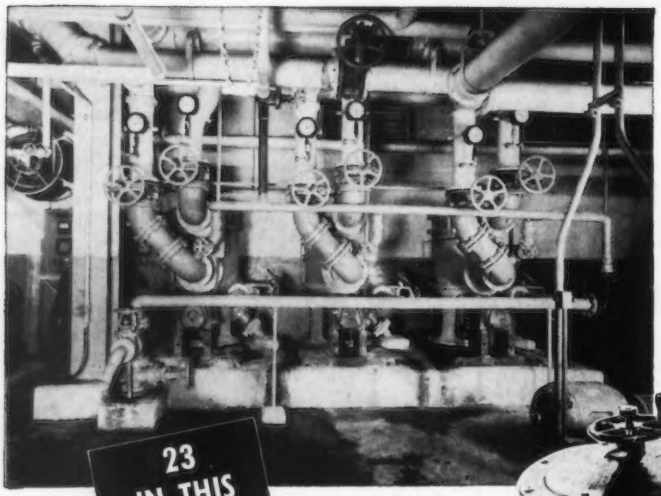
NOV. 18: Miami Valley Div., of the American Pulp and Paper Mill Superintendents Assn., Joint Meeting with the Ohio Section of TAPPI, American Legion, Middletown, Ohio.

NOV. 20-21: TAPPI Corrugated Container Conference, Schroeder Hotel, Milwaukee, Wis.

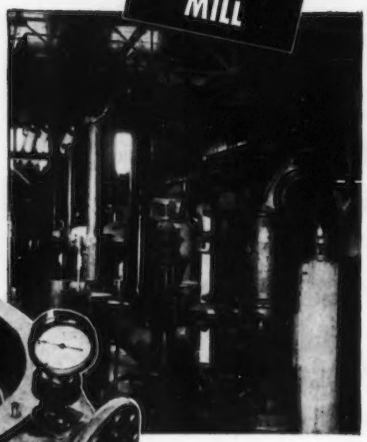
FEB. 15-20, 1953: APPA, Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

FEB. 16-19, 1953: TAPPI, Annual Meeting, Commodore Hotel, New York, N. Y.

JUNE 9-11, 1953: APPMSA, National Meeting, Atlanta-Biltmore Hotel, Atlanta, Ga.



23 IN THIS COMPANY



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The "screens" of this new type shown above are just nine of the twenty nine operated by just two companies.

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*Trade Mark

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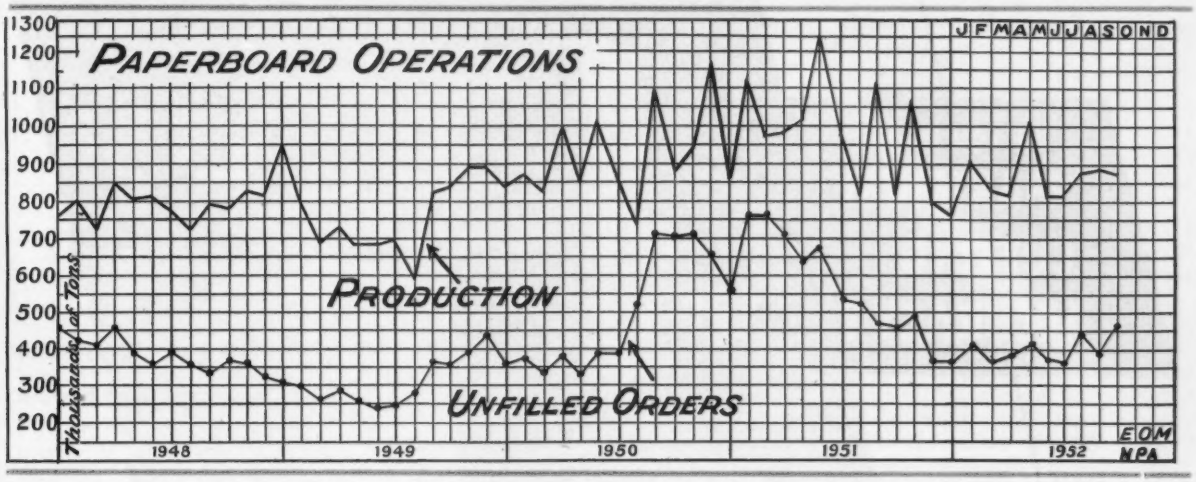

Brief of Important Figures

Source	Production	WEEK ENDING Oct. 4, '52	Sept. 6, '52	Oct. 6, '51
APPA	Paper Production Percent Capacity[3]	89.1	65.9	101.0
	Unbl. Kraft Paper Production Percent	77.2	62.3	99.1
NPA	Paperboard Operating Ratio Percent Inch Hours	95	72	88
		Aug. 1952	**July 1952x**	**Aug. 1951**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	736,000	674,613	925,500
	New Orders ....Tons	722,000	715,195	875,000
	Unfilled Orders ....Tons	760,806	768,806	1,001,800
	Shipments ....Tons	724,000	671,085	906,000
		Sept. 1952	**Aug. 1952**	**Sept. 1951**
NPA	Paperboard Production ....Tons	875,455	886,035	816,356
	New Orders ....Tons	954,126	832,096	825,249
	Unfilled Orders ....Tons	459,907	388,360	458,150
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufacturers Total Index	192	205	214
	Durable Mfg. Index	225	249	266
	Nondurable Mfg. Index	180	187	188
	Chemical Products Index	291	295	301
	Mfg. Food Products Index	172	166	176
	Printing and Publishing Index	145	175	155
ODC	Magazine Advg.-Printer's Ink Index	362	362	368
	Prices Index			
BLS	Consumers Price Index[1]	190.8	189.6	185.5
	Wholesale all Commodities[4]	111.8	111.2	114.2
	Wholesale Processed Foods	110.0	108.5	110.7
	Commodities other than Farm Products and Foods[4]	112.5	112.6	115.7
	Wholesale Pulp, Paper[4] and Allied Products	115.3	116.7	120.2
	Purchasing Power of Dollar, Consumers Prices[1]	52.4	52.7	53.9
	General Activity Index			
FRS	Mfg. Production-Worker Payroll[4]	120.5	126.8	126.4
	Unemployment Compensation Initial Claims (M)	1,585	978	1,086
	Miscellaneous Carloadings–Thousands of Cars	1,155	1,298	1,455
	Electric Output (Million KW hr.)	37,007	36,052	35,435
PTJ	Average 32 P & P Common Stocks as of Oct. 11	$35.23	$35.20	$40.83

[1] 1935–39 = 100 Unadjusted Index.
[2] For Five Weeks.
[3] New 6-7 day basis.
[4] New Index 1947–1949 = 100.
* For details see APPA Monthly Statistical Summary—August 1952 Estimated Figures.
° Latest Month Available on Request.
x Revised Figures.

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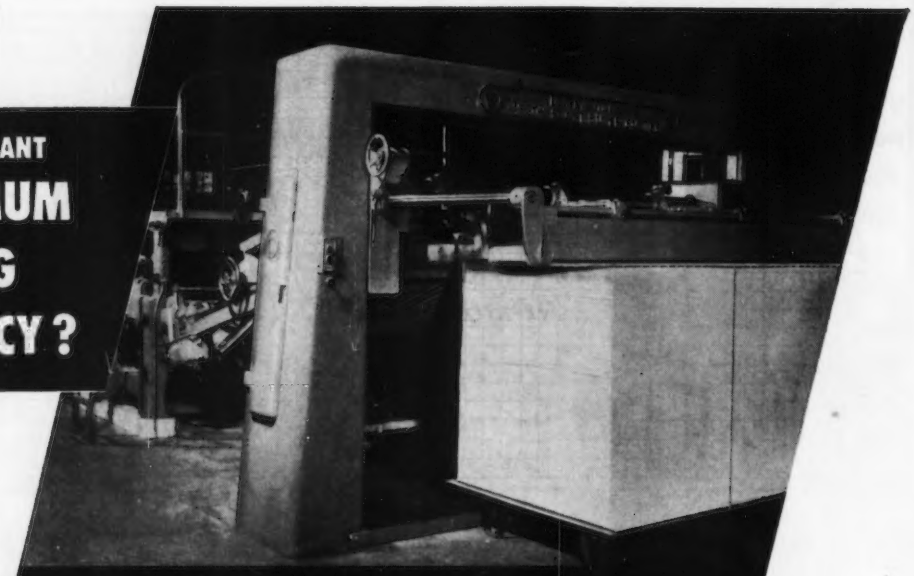
MAXIMUM CUTTING ACCURACY?



INVESTIGATE THE

NEW DOWNINGTOWN MASSON-SCOTT SUPER CUTTER & LAYBOY

Accuracy in a high speed cutter is essential for the production of a quality sheet . . . to reduce rejections due to imperfect edges and sizes. The Downingtown Masson-Scott Super Cutter and Layboy is a highly accurate cutter which does not sacrifice speed to secure this accuracy. A tolerance of ±1/64th inch or better is maintained over long periods of sustained high speed cutting *without* the necessity for making frequent adjustments.

Specially designed slitting mechanism is a part of the Super Cutter and permits accurate sheet trim and slitting without any additional operations or labor. Another point of accuracy is found in the Layboy of the Downingtown Masson-Scott Super Cutter. Here sheets are piled from the floor upwards in uniform, straight sided stacks. Automatic counters and similar equipment can be supplied as desired.

Your Downingtown Sales Engineer will submit complete data about the Downingtown Masson-Scott Super Cutter and Layboy or write for Bulletin No. 252A.

View showing adjustment mechanism for different sheet lengths.

Indicator and mechanism for controlling length of sheet being cut.

MODERNIZATION IS CONSERVATION

DOWNINGTOWN MANUFACTURING COMPANY, DOWNINGTOWN, PA.

Pacific Coast Representative: John V. Roslund, Pacific Building, Portland 4, Oregon

Downingtown Fibrepulper, Manufactured in Canada by Waterous, Limited, Brantford, Ontario

DOWNINGTOWN

MASSON-SCOTT SUPER CUTTER & LAYBOY

DESIGNERS AND BUILDERS OF PAPER, BOARD AND FELT MACHINES SINCE 1880

Paper TRADE JOURNAL

TRENDS

Mid-October Business Is Slowed By National Elections

A pre-election quiet has settled on general business, with no pickup due until the outcome of the Presidential Election is determined.

Held to be normal for mid-October in national election year, the lack of drive is more notable because of the buyer's market which prevails in most commodities. When a man knows he can buy what he wants and get it when he wants it at a firm price, he doesn't overbuy.

On the other hand, the seller is not over-anxious to dispose of his merchandise below current levels. Usually that price is either at OPS ceiling or, as in the case of woodpulps, waste papers, cottons and the like, is close to rock-bottom.

Except for distress lots which are being offered for spot purchase, there is no desire to cut prices further.

Five-Percenters Are Not Confined to Washington

Of course, if you have a large order to place, you might be able to land a five percent discount. As one merchant aptly remarked recently, "The *five percenters* are not confined to Washington, D.C."

What has happened is that certain segments of the industry have restored the practice of allowing five percent discounts from large orders. This is believed to be particularly true of printing paper orders.

Strikes at Book Mills To Advance End of Inventory Cycle

Labor strikes at major book paper mills are seen as advancing the end of the inventory cycle in *book* and other publications papers from early 1953 to possibly early December. Still unsettled at several mills, the strikes have taken from the market production of an estimated 100,000 tons of printing stock.

Says the October 8 report of the National Association of Purchasing Agents of the book paper market, as reported by Paul B. Scott, *Kingsport Press*, Kingsport, Tenn.:

"During the past two months, some mills who furnish book papers have been —and still are — on strike. This has thrown a heavy burden on the mills which are still in operation. So, in reviewing the last report, it looks as though the prediction of a plentiful supply will not be the case, and we can only wait to see what the ultimate outcome will be.

"There continues to be some forward buying on book papers, and a few suppliers look for an advance in price. However, the buyer cannot agree that such should be the case. It is possible, as, no doubt, the strikers will be paid more wages; this, in turn, will be passed on to the purchaser, provided the mills can do it and not get their paper prices higher than those of their competitors.

"Jobber warehouse stocks seem to be about normal, and most items in small quantities can be shipped immediately. As this is being written, there are ten or eleven paper mills on strike, which could, if the strikes continue, cause some drastic shortages."

Cotton Cuttings Supply Reaches Better Balance

Stepped-up operations at shirt factories and other textile mills, with the resultant larger supply of cuttings, has effected a better supply-demand balance for white shirts, underwears, and other cuttings.

The market is described as steady with firmer prices noted in New York than in Boston. Philadelphia shows some easing.

Quoted mill delivered basis for selected cuts of white shirts is $15.50 in New York. Underwear cuts are a bit stronger, other grades generally maintained.

Dealer buying prices for old domestic rags in the Philadelphia area range from $3.50/4.50 for mixed white; $2.25/3.00 for *thirds* and *blues;* $3.50/4.50 for cotton pants and overalls. No. 1 roofing stock is quoted at $1.00/1.30, dealer basis; No. 2 is $.85/1.00.

New York quotation on No. 1 roofing has been strengthened during the last few days by the short supply. Going price is named at $1.30/1.40, a rise of 10c a cwt.

Also a factor in market balance is the price resistance which is reportedly coming from paper mills. Influencing the restricted buying is the large stock of rags, reported for the end of August by the Bureau of Census at 54,358 tons. This figure compares with 55,462 tons in July and with 53,180 tons in June.

Acquired during the month of August were 25,593 tons of all types of rags, compared with 25,016 tons received in July and with 26,939 tons bought in June.

Consumption figures during the same three months stood at 26,785 tons in August, 22,975 tons in July, and 28,342 tons consumed in June.

Usage of Linters Compared

Usage of cotton linters also is reported for its effect on the cotton cuttings market.

August figures of 1,077 tons consumed compares with 746 tons in July, with 1,184 tons in June, and with 1,808 tons in August, 1951.

Receipts for the same period were reported at 879 tons for August, 581 tons for July, and 904 tons in June, 1952.

Close of August stock showed a drop of 5 percent to 2,844 tons, compared with 3,017 in July and with 3,226 in June, and with 1,943 tons in August, 1951.

Forecast a 5 Percent Drop in 1952 Cotton Crop

The Crop Reporting Board of the Department of Agriculture forecast on October 8 a 1952 cotton crop of 14,413 million bales of 500 pounds gross weight, based on crop conditions as of October 1. This compares with last season's production of 15,144 million bales.

Estimate Cotton Linters Output

Production of cotton linters during the current season, based on the cotton crop forecast, may approximate 1,560,000 bales. This estimate is based on the assumption (1) that the percentage of cottonseed crushed this season will be the same as last—86 percent of production; (2) that the average cut per ton of seed crushed will equal 186 pounds net, last season's average; and that (3) linters bale weights will average 600 pounds. On the basis of this production estimate, the 1952-53 supply (carry-over plus production) would approximate last season's 2,120,000 bale supply.

Spotty Trading in Rosins

Demand for gum rosin is described as light and spotty, and shows no sign of a comeback. Local market prices on top grades are lower by 10 to 25 cents. Minor changes in papermaking grades were noted, and late Savannah quotations are within the range of $7.30/7.36 for K, M, N grades in drums, f.o.b. plants.

—E.P.N.

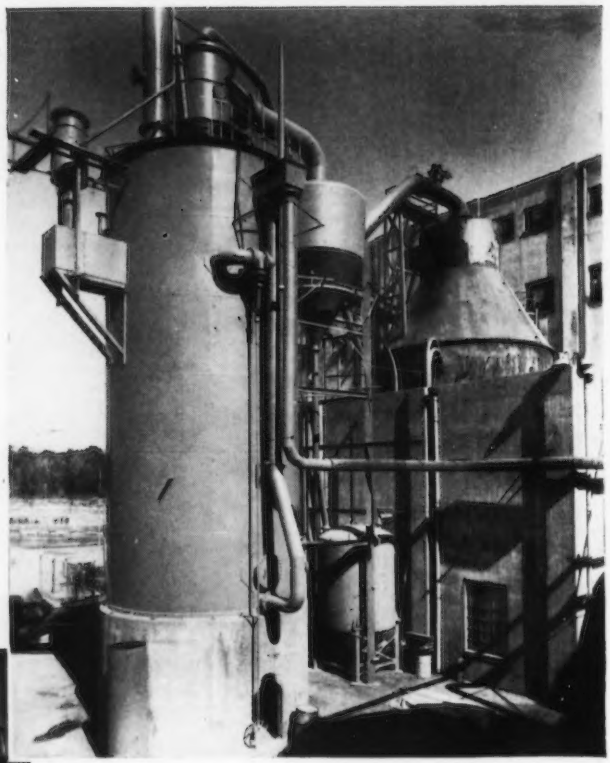
Paperboard Production (Tons)*

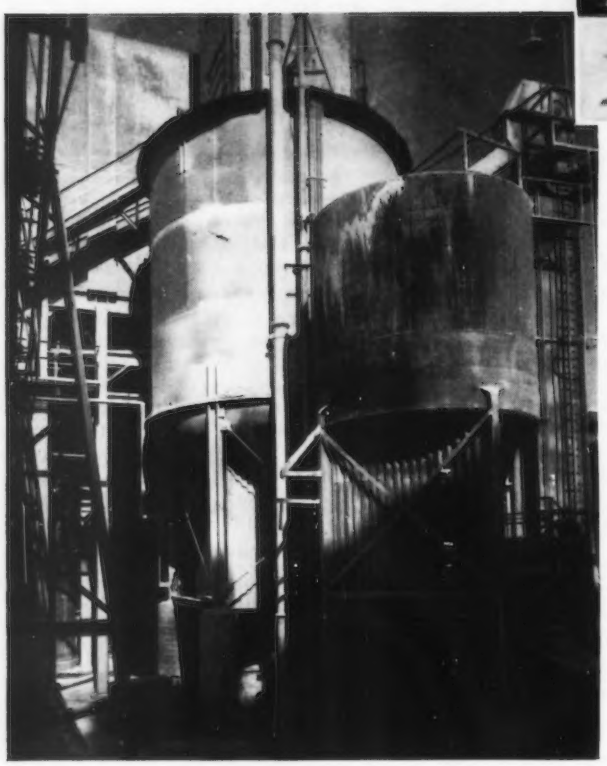
	Oct. 4 1952	Sept. 27 1952	Oct. 6 1951
Production	240,751	231,754	215,312
New Orders	335,236	227,129	287,590
Unfilled Orders	553,261	459,907	528,885
% of Activity	95	94	88

* Source: National Paperboard Assn.

HORTON Steel Plate Structures

a familiar sight in the pulp and paper industry





View of reburned lime and fresh lime storage tanks fabricated and erected by the Chicago Bridge & Iron Company.

The 18 ft. diam. by 40 ft. accumulator and the 26 ft. diam. blow tank shown above are two of the many types of steel plate structures we fabricated and erected at the Weyerhaeuser Timber Company Pulp Division plant at Springfield, Oregon.

Supplying digesters, chip tanks, blow tanks, seal tanks, storage tanks, elevated water tanks and Marx Savealls made of carbon steel is a regular part of our business. We are also equipped to build digesters and other structures from special metals to meet your specifications. We have complete facilities for x-raying and stress-relieving and recently enlarged our facilities for painting and pickling fabricated steel plate work by the Horton phosphoric acid process.

When your plant requires new tanks or steel plate work to keep pace with the ever growing demand for paper products, investigate the experience and facilities of Chicago Bridge & Iron Company. Write our nearest office for estimates and quotations. There is no obligation on your part.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3.....2142 Healey Building
Birmingham, 1.....1559 North 50th Street
Boston, 10.....1064—201 Devonshire Street
Chicago, 4.....2130 McCormick Building
Cleveland, 15.....2255 Guildhall Building
Detroit, 26.....1565 Lafayette Building
Havana.....402 Abreu Building
Houston, 2.....2163 C & I Life Building
Los Angeles, 17..1561 General Petroleum Building
New York 6.....3333—165 Broadway Building
Philadelphia, 3..1665—1700 Walnut Street Building
San Francisco, 4.....1577—200 Bush Street
Seattle, 1.....1368 Henry Building
Tulsa, 3.....1666 Hunt Building
Washington 6, D. C.....1170 Cafritz Building

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.
In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

Further Hints of Saskatchewan Mill

Eastern Canada and United States interests as well as Swiss and British interests are reportedly looking over the prospects for establishing a new pulp and paper industry in Saskatchewan, according to authoritative sources, with possibility that the new enterprise will be located in northern Saskatchewan.

A recent estimate indicates that Saskatchewan has over 16 million cords of softwood of a kind most suitable for such an industry. In addition, there is an adequate water supply and railway facilities are available in desirable localities. There are other inducements, including several plants producing sodium sulphate salt which could be used for producing kraft papers.

Some unnamed foreign financial interests are known to be probing the possibility of establishing a pulp and paper industry in that province and at the same time they are said to be seeking permission of their home governments to make the heavy investment in Canada. The exchange problem is holding up more definite arrangements to go ahead with plans.

Resume Work at Westvaco's Williamsburg Mill

NEW YORK—Workers at the Williamsburg, Pa. mill of the West Virginia Pulp and Paper Co. returned to work on October 10.

Strikebound since August 22 when members of C.I.O. United Papermakers Union at this plant joined those at the Covington, Va. and Luke, Md. plants in a disagreement over a new contract, the Williamsburg mill was reopened last week at the request of the workers.

No contract has yet been negotiated, and the strike continues at Covington and Luke where some 2,000 and 1,400 persons respectively are idle.

All three mills produce book and publication papers.

Additional Bolton Winner

In the original announcement of the Bolton award winners, John O. Marquard of S. D. Warren Co., a divisional winner of $100 was left out. We are happy to make this addition to the list.

The Paper Trade Journal announces the appointment of D. Bruce Otis, Jr., to the job of associate editor. Mr. Otis joins the Journal after several years as a supply salesman to the pulp and paper mills of New York State. Before his association with the paper industry, he was an English instructor at Columbia University and Hamilton College.

India May Manufacture Kraft Paper from Banana Stumps

According to Mr. G. H. Gondhalkar of the Hand-made Paper Research centre, Poona, a formula for the manufacture of kraft paper from banana stumps has been evolved.

The formula, the result of numerous trials, consists in the utilization of a mixed pulp of banana and jute in the proportion of sixty to forty percent respectively. It is claimed that the resulting kraft paper will compare favorably in strength with the imported variety.

Taking into account the fact that near 40,000 acres of land are under banana cultivation in Bombay State alone (the all-India figure is around eight million) yielding about 3,020,000 tons of wet stumps, it is believed that without much difficulty 11,500 tons of kraft paper can be produced annually.

Practical production difficulties however are there but the import difficulties in themselves are likely to prove a positive incentive.

Plan Newsprint Mill for Ohio

Eight daily newspapers of Cincinnati, Dayton and Columbus are planning a 100-ton newsprint mill to be known as United News Print Mills. The estimated cost is approximately $6,500,000 if newly built and considerably less if a suitable building can be found.

St. Regis' Eastport Mill Gets Ready for Start-Up

JACKSONVILLE, FLA. — Wood shipments are ariving at the new Eastport mill of the St. Regis Paper Co., just north of Jacksonville, which is expected to be ready to start operations in December. The first shipments were from a 21-year-old stand of planted pine in the Suwannee Forest, a 220,000-acre property in south Georgia, which St. Regis is operating on a long-term management lease. Receipts will be about 600 cords a day until a backlog of 10,000 cords or more has been built up.

The wood as it arrives is unloaded and stacked by cranes, but when wanted for processing will be dumped into flumes, where it will float to a conveyor which will carry it to the barking drum. Albert Ernest, St. Regis vice-president, says that the woodyard, with capacity for 100,000 cords, will be the most modern in the South.

John Ferguson is resident manager of the Eastport mill. Arnold Loessner and Stephen Kaptain are in charge of wood procurement. Marc Rawls is manager of the woodlands division of St. Regis. The Suwannee Forest will supply the mill with about 100,000 cords a year and an additional 75,000 cords will be procured elsewhere.

Forest Products Firm Formed at Thunder Bay

Backed principally by the Great Lakes Paper Co., Ltd., Abitibi Power & Paper Co., Ltd., and St. Lawrence Corp., Ltd., a new forest products company has been formed, Thunder Bay Forest Products Ltd., to buy, sell and generally deal in forest products of the Thunder Bay area of Ontario. The head office will be at Lakewood, Ont.

One of the objects of the new company will be to provide a ready market at the lakehead of Ontario for loggers to help them in disposing of their logs at a fair price without having to seek out buyers, according to a spokesman for the Ontario Government.

Wallace A. Delahey will be president and general manager of the new company. During the last World War, he was Pulpwood Controller for the Canadian Government's Wartime Prices and Trade Board. Lately, he has acted as practicing consultant in forestry.

MERCHANDISING IDEAS

Champion-International Revamps Merchandising and Advertising

Champion-International Co., Lawrence, Mass has completely revitalized its merchandising and sales program, from brand names to ream-sorting tickets.

Taking the prefix "CICO" from the name of the company, Champion's nine mill brand papers will now be known as Cico-Gloss, Cico-Graph, Cico-Flex, Cico-Fold, Cico-Brite, Cico-Press, Cico-Print, Cico-Lith and Cico-Offset.

Skid labels are now in bright new colors. New ream sorting tickets make it easier for the paper merchant to handle reshipments. Sample paper folders and new swatch books will help him demonstrate the color, detail and reproduction qualities of the company's line of coated papers.

A new Merchant's Handbook will give detailed specifications of each grade of Champion-International paper. Mill history and sales information, prices and shipping facilities will be published together with complete information concerning the mill's operation and policy as it affects paper merchants.

The new merchandising program will be backed by an impressive advertising program beginning with the October issues of such magazines as The New Yorker, National Geographic, Advertising Agency, The American Printer, New England Printer, Printer's Ink and Printing Magazine. Color inserts will be used to show the printing quality of Champion-International coated papers in the trade magazines. Reprints of the advertisements will be provided for the merchants.

Marathon Promotes Waxtex

Four different salt and pepper sets in unique designs will be offered to consumers in Marathon Corp.'s big new Waxtex promotion beginning this month.

The premiums will be offered at prices ranging from 25c to 50c a set plus the patent number panel or pull-out tab from one box of Waxtex, household roll of waxed paper.

Nationwide advertising beginning October 26, store cards, shelf strips, special packaging and package inserts will tell the story to the public.

A 4-color advertisement appearing in Parade, This Week and a number of newspapers on October 26, and in the November issues of The Ladies' Home Journal, Woman's Day and Family Circle, will illustrate all four premiums and include a coupon to make ordering easy.

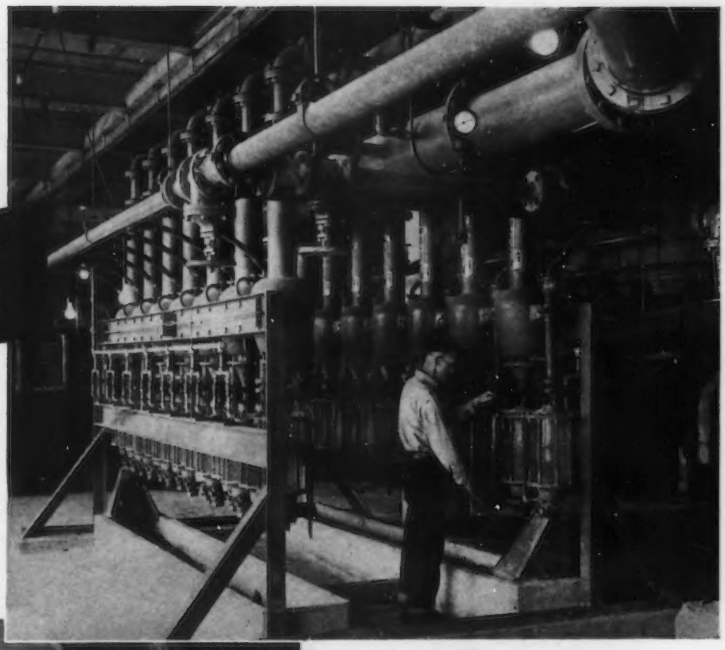
A specially printed Waxtex box with a simulated "wrap-around band" in brilliant yellow, reproducing one of the premiums in natural color, will help to attract shoppers and also add interest to store displays. Inside the box will be an insert giving full details about the four premiums and explaining in detail, with a coupon, how to get them.

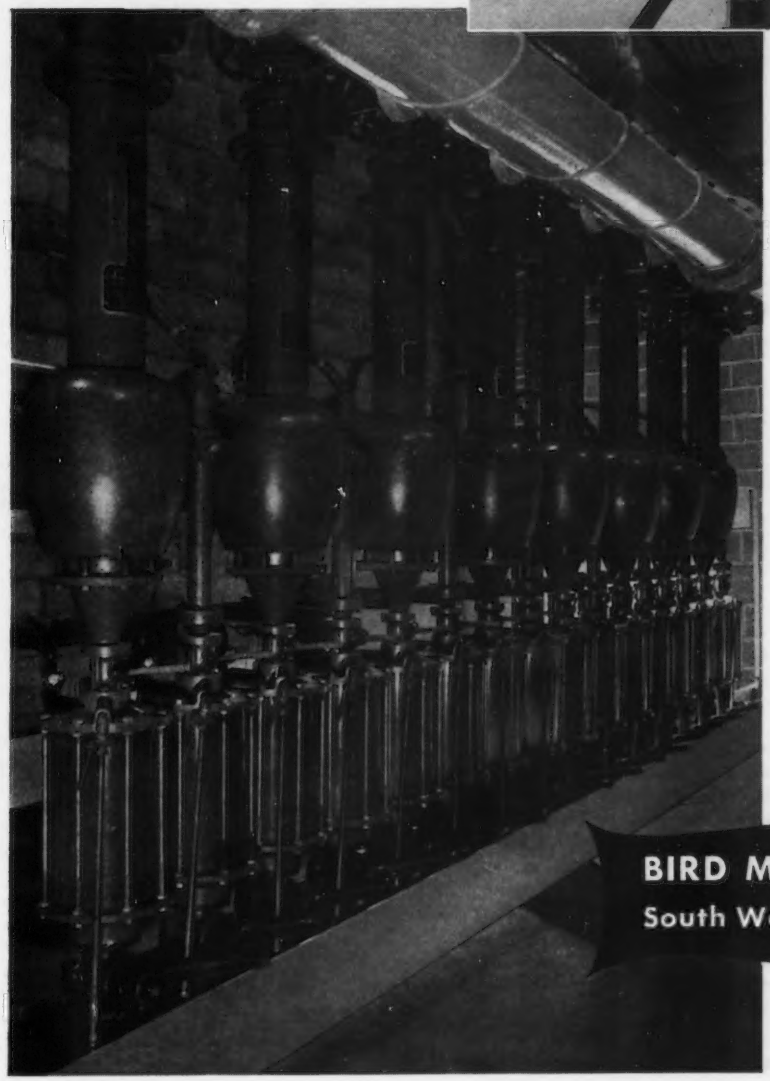
Oxford papers in action attracted thousands of visitors to the Maine Event exposition at Scarborough Downs, September 5 to 14. The exhibit, developed by the Sales Department of the Oxford Paper Co., shows the end use of the more than 600 tons of fine quality book and specialty papers manufactured by the company each day. Book papers, specialty wrapping papers, label papers, and business papers were exhibited as they are actually used by publishers, printers, and manufacturers throughout the country. . . . This display has been used by the Oxford Sales Department at Sales Meetings, Printer's Shows, and Community Shows during the past year. . . . Supplementing the paper exhibit was a color slide film showing the company's manufacturing facilities and operations at Rumford, Maine.

On Waste Paper Stocks, Too

DIRTECS

Do The Most Effective Dirt Removal Job





Here are two representative Dirtec installations among the dozens that are working on old paper and deinked stocks.

Dirtecs on such stocks, as on all other kinds of stock, produce uniformly clean, bright stock with negligible fibre loss. They take out such tough to handle dirt as asphalt and ink balls.

Dirtecs are easy to install and operate. The dirt collected is out of the stock for good and all — cannot get back into the system.

BIRD MACHINE COMPANY
South Walpole • Massachusetts

Kimberly-Clark's Wadding School

Mid-morning coffee hour between sessions of recent industrial wadding school conducted by Kimberly-Clark Corp. for distributor representatives found this group sharing the same table. Left to right are Fred M. Hueber, The Millcraft Paper Co., Ft. Wayne, Ind.; H. C. Gilhula, Graham Paper Co., Grand Rapids, Mich.; R. J. Piltz, Kimberly-Clark, Chicago; John E. Blankenship, Carpenter Paper Co., Omaha, Nebr.; Robert Gordon, Graham Paper Co., Ft. Smith, Ark.; and F. J. Burbee, Kimberly-Clark, Cincinnati, Ohio. The school was attended by 37 distributor men from all parts of the country.

Marathon's Patty Paper Has New Form and Wrap

Marathon Corp., Menasha, Wis., has re-introduced its Dispens-A-Wax patty paper in a new form. The sheets are flat instead of interfolded, and the carton which holds them has been newly designed.

Dispens-A-Wax is a high wet-strength paper used by restaurants and food stores for interleaving hamburger or cube steak patties, individual portions of sliced luncheon meats and cheese slices.

When the perforated panel of the carton is removed, 1,000 flat sheets are ready for instant use. The sheets dispense one at a time and are always at the user's finger tips.

A.P.W.

ONLIWON

INDUSTRIAL
TOWELS
TISSUE

FINANCIAL

Scott Paper Co., Chester, Pa., warrants covering $24,407,000 Scott 3% Convertible Debentures have been exercised. This represents 97.8% of the debentures offered under subscription rights which expired at 3 P.M. September 23.

The company had offered its shareholders rights to subscribe to $24,952,800 of the debentures at par on the basis of $100 principal amount of debentures for each 12 common shares held on September 8th. The unsubscribed portion of the issue amounting to $545,800 has been taken up by an underwriting group managed jointly by Drexel & Co., Smith, Barney & Co., and Merrill Lynch, Pierce, Fenner & Beane.

From the proceeds of the offering Scott expects to use approximately $16,600,000 for the construction of a new paper mill at Everett, Wash.; $1,000,000 to increase the capacity of its Soundview Division Pulp Mill by an estimated 8 per cent; $1,220,000 to build a new converting plant at Marinette, Wis.; with the remainder being added to the company's general funds.

Robert Gair Co., Inc., New York, as of September 30, has retired at par its outstanding $20 par value 6 percent cumulative preferred stock in the amount of $5,977,600.

Donnacona Paper Co., Ltd., has declared a dividend of 50c on common, payable October 15 to shareholders of record September 30.

Bathurst Power & Paper Co., Ltd., has declared a dividend of 75c on Class A and another of 25c on Class B, payable December 1 to shareholders of record November 3.

Dryden Paper Co., Ltd., has declared a dividend of 40c quarterly plus extra dividend of 40c, payable November 1 to shareholders of record October 6.

Howard Smith Paper Mills Ltd., has declared a dividend of 50c on preferred and 25c on common, both payable October 30 to shareholders of record September 30.

Price Bros. Co., Ltd., has declared a dividend of 2 percent on preferred, payable January 1 to shareholders of record December 10.

Mead Corp. has declared a stock dividend of one share of common for every fifty held in addition to the regular quarterly of 40 cents a share in cash. Both stock and cash payments will be made December 1. Shares issued as the stock dividend also will receive the cash payment and cash will be paid in lieu of fractional shares based on the closing price October 29.

National Container Corp. has declared the regular quarterly dividend of 25 cents per share on its Common Stock, payable December 10 to stockholders of record at the close of business on November 20.

The directors also declared the regular quarterly dividend of 31¼ cents per share on the corporation's $1.25 Convertible Preferred Stock, $25 par value, payable December 10 to stockholders of record at the close of business on November 20.

MacMillan & Bloedel Ltd., reports that during August an additional 1,981 Class A shares were converted into 1,981 Class B shares, reducing outstanding Class A shares to 165,048 and increasing outstanding Class B shares to 5,120,490.

Oxford Paper Co. has placed seven million of its 20-year 4 percent serial sinking fund debentures and an agreement for sale of an additional three million by October 1, 1954. The Old Colony Trust Co. has been appointed trustee. The loan will be repaid through semi-annual installments of $250,000 beginning April 1, 1958, with the unpaid balance due October 1, 1972.

News about

B. F. Goodrich Chemical *raw materials*

YOU can improve paper, and open the way to more saleable paper products, with Hycar's help. See how!

Paper impregnated with Hycar latex is softer yet stronger . . . has better absorption resistance . . . gains improved tear and wet strength. It has a cloth-like feel . . . makes smooth-draping sheets.

And this Hycar-improved paper can be used in profitable ways—for bags, protective wrapping, tape backing, shelf covering, imitation leather base. More uses are possible.

Hycar latex is easy, safe and economical to use. It may be added to paper before or after sheet formation. No dangerous or inflammable solvents are needed. No costly recovery system or vulcanization equipment is required.

Hycar can be used in other helpful ways—for modifying other resins, for making phenolics tough rather than brittle. It is non-migrating and non-volatile, ideal for permanently plasticizing vinyl resins.

Hycar-based adhesives can permanently bond paper, wood, leather, aluminum foil and vinyl films to themselves as well as to other materials. Send for helpful advice—technical bulletins. Please write Dept. HM-11, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ont. Cable address: Goodchemco.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

Hycar
Reg. U.S. Pat. Off.
American Rubber

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON organic colors

The company has also borrowed two million dollars on 3½ percent bank notes, repayable $500,000 on October 1, 1954, and $250,000 semi-annually thereafter. Proceeds from the sale of debentures and from the bank notes have been used to pay all of the company's outstanding debt as of October 1, 1952. The remaining balance will be used for further modernization and for additional working capital.

Canadian Chemical & Cellulose Co. has provided option for its executive employes to purchase 50,000 common shares at $15.50 each up to December 31, 1962.

PEOPLE

DR. EMIL HEUSER, Research Associate Emeritus of The Institute of Paper Chemistry who now lives in La Jolla, Calif., was signally honored recently when he was eulogized by an entire issue of *Das Papier,* the publication of the German Association of Pulp and Paper Chemists and Engineers. The occasion for this anniversary number was Dr. Heuser's 70th birthday, at which time he was also given the association's highest award, the Alexander Mitscherlich Denkmünze, a coveted commemorative medal.

Dr. Heuser was educated at Munich, Graz and Karlsruhe where he received the degree of Doktor Ingenieur in 1909. In early life he gained first-hand experience in pulp and paper mills in Germany and Austria. At the Technical University at Darmstadt he served as Professor of Cellulose Chemistry from 1912 until 1923 with an interlude of two years. After the publication of his monograph Lehrbuch des Cellulosechemie, he was Honorary Professor of Cellulose Chemistry at the Technical University of Charlottenburg. In 1926 he became Director of Research of the Canadian International Paper Co.

His appointment as group leader of cellulose chemistry at the Institute came in 1938 and he was made Research Associate Emeritus in 1947. In the following year, Dr. Heuser was the recipient of the TAPPI medal.

T. H. MULLEN, formerly Deputy Director, Pulp, Paper, Paperboard Division NPA, has become the Washington Representative of American Paper and Pulp Assn.

DR. ROLAND E. KREMERS, until recently connected with the Central Laboratories Division of General Foods, has been appointed Research Associate in organic chemistry at the Institute of Paper Chemistry.

Dr. Kremers received his A.B. and Ph.D. degrees from the University of Wisconsin where he later held a National Research Council Fellowship in chemistry. Before he entered industry he served as Assistant Chemist at the Forest Products Laboratory and taught at Wabash College, Vanderbilt University, and Ohio State University. He became associated originally with the General Foods Corporation as Research Chemist; and at its Central Laboratories Division since 1939 he has been successively in charge of Organic Research, Assistant Manager, and Manager of Basic Research.

HENRY W. FALES, vice-president and general manager of the St. Croix Paper Co., Woodland, Maine, has been elected to a three-year term as director of the Associated Industries of Maine.

PAUL G. LEE is now Sales Representative for the Southwest Territory with headquarters in Dallas, Texas, for the Rhinelander Paper Co., Rhinelander, Wis. Mr. Lee has been on the Rhinelander Sales Force since 1950, and in the general office his duties were on the sales of innerwrap papers. Prior to coming with Rhinelander, he was associated with International General Electric Co.

ROBERT N. WALLIS, assistant treasurer of the Dennison Manufacturing Co., Framingham, Mass., was re-elected a regional vice-president of the Controllers Institute at that organization's 21st annual meeting, held October 5-8 in the Sheraton-Cadillac and Statler Hotels, Detroit. **Stuart W. McLaughlin,** comptroller of the West Virginia Pulp and Paper Co., New York, was chosen assistant treasurer.

Both men have been active in the Institute and its local chapters for several years. Mr. Wallis, a member since 1943, will be serving his third term as regional vice-president. He was president of the Boston Control for 1948-49. Mr. McLaughlin was chairman of the Registration Committee at the 20th annual meeting.

EVERETT P. INGALLS, mill manager for S. D. Warren Co., has been named to the board of directors for the Maine General Hospital, Portland.

WALTER F. FRIEDMAN has been appointed manager of sales engineering of General Gummed Products, Inc., Richmond Hill, L. I., N. Y.

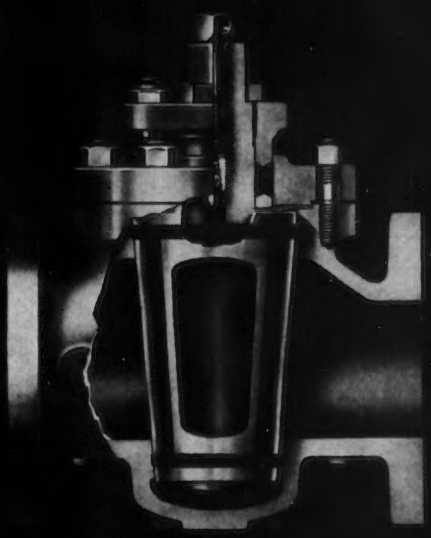
MILLARD C. TEAGUE has been named manager of Fine Paper sales of the Ecusta Paper Division of Ecusta Paper Corp.

Since joining Ecusta in 1939, Mr. Teague has contributed greatly to the development of the Fine Paper line which he now heads. Prior to coming with Ecusta, he was with the Champion Paper and Fibre Co., Canton, N. C.

JOHN RINGLEB, head of the traffic department of the Kimberly-Clark Corp., Niagara Falls, N. Y., who has been promoted and transferred to the company's main offices at Neenah, Wis., was honored at a dinner meeting of the Freight Traffic committee of the Niagara Falls Chamber of Commerce.

Freight traffic officials of leading transportation companies serving Niagara Falls and Buffalo were among the 68 persons honoring Mr. Ringleb, who is vice-chairman of the chamber's committee.

F. C. GOODWILL has been named resident agent of the Kalamazoo River Improvement Co., and the registered office of the company has been moved from the Allied Paper Co. to the St. Regis Paper Co.



LUBRICATED PLUG

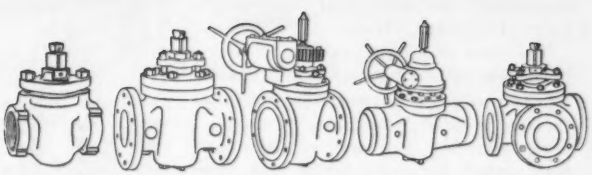
COMPLETE LINES OF LUBRICATED PLUG VALVES

Because of the wide range of services to which Lubricated Plug Valves can be adapted, they may be classed as "all-purpose" valves. Walworth manufactures complete lines of Lubricated Plug Valves in a variety of types and materials for working pressures up to 5,000 psi and for vacuum services. Sizes range from ½ to 30 inches. Write for descriptive literature.

Walworth also manufactures complete lines of gate, globe, angle, and check valves made of steel, bronze, iron, and special alloys.

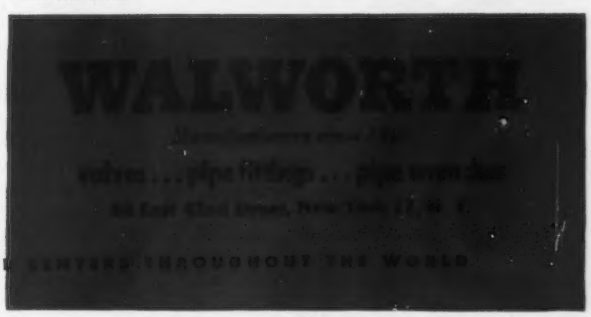
Walworth valves, pipe fittings, and pipe wrenches total approximately 50,000 items and are sold through distributors all over the world.

Walworth engineers will be glad to help you with your problems. Call your local Walworth distributor, nearest Walworth sales office, or write to our General Offices, 60 East 42nd Street, New York 17, New York.



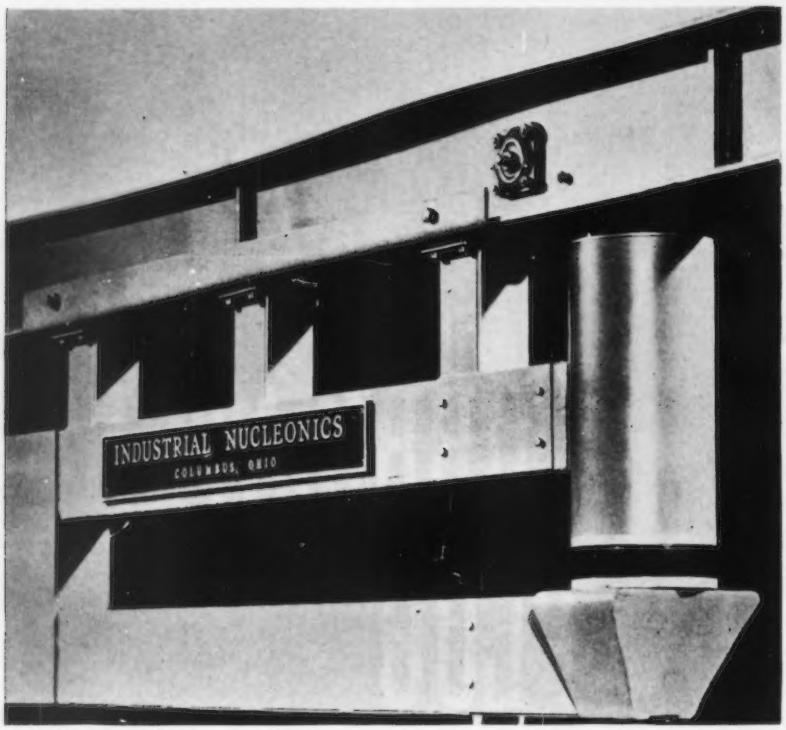
Illustrated in section is a Walworth No. 1700F Regular Gland Type, Wrench Operated, Steeliron, Lubricated Plug Valve. This particular line of valves has a working pressure rating of 200 psi at 150F or 125 psi at 450F. Sizes range from ½ to 8 inches. Other Walworth Lubricated Plug Valves include Single Gland and Ball Bearing types. They are available for a variety of working pressures.

For best results use Walworth Lubricants and Walworth High Pressure Lubricant Guns.



DISTRIBUTORS IN PRINCIPAL

EQUIPMENT AND SUPPLIES



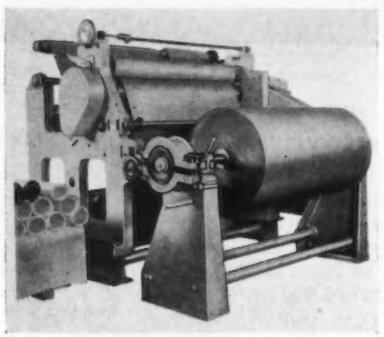
Overhead Traversing Mount for Beta Gauge

Specially designed for use in the paper and board industry is a new mounting for the AccuRay beta gauge just announced by Industrial Nucleonics Corp., Columbus, Ohio.

The new mounting is of the overhead type which permits the gauge to be installed on paper machines without the necessity of supporting base members, allowing full use of premium floor space for rethreading and handling broke.

Constructed of welded steel beams and plates, the measuring unit is supported in rigid alignment, yet rides freely on its overhead carriage to traverse the web, it is said. Throat depths up to 100 inches are available in the new model, making it possible for a dual installation to give a complete profile measurement for sheets as wide as 200 inches.

No change has been made to the measuring system which utilizes beta rays to give a direct reading of basis weight with extreme accuracy. The non-contacting AccuRay features its unique standarization cycle, which every 30 minutes automatically corrects for change in plant operating conditions, including temperature, humidity, and dust collection on source window.

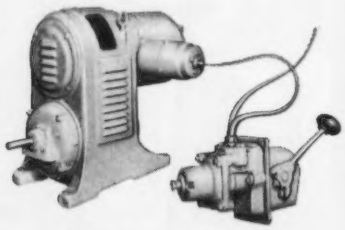


Continuous Rewinder For Rolls Without Cores

Rewinding rolls of materials in short lengths, such as locker foil, counter rolls, insulating materials, etc., may be done in continuous operation on the Inta-Roto Automatic Rewinder, Model RS-1, a new machine developed by Inta-Roto Machine Co., Richmond, Va.

The machine consists of an unwind stand for mill rolls up to 36 inches in diameter, a slitting attachment for side trimming or slitting the roll, a pull unit and a two-arm rewinder.

The rewinder is equipped with two collapsible cores. The operation is as follows: The web winds around one collapsible core until a predetermined length is reached and the web is cut. Immediately the cut web is started around the second core to begin the new roll. While this second roll is winding, the first roll moves to the top position, where an operator has sufficient time to take it off the shaft without interruption of the machine's operation.



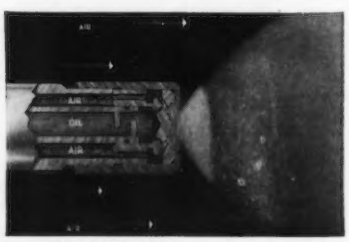
Pneumatic Remote Control for Varidrive Motors

Variations in speed of U. S. Varidrive motors by pneumatic remote control are now possible through a recent development of U. S. Electrical Motors Inc., 200 East Slauson Avenue, Los Angeles 54, Calif.

This control consits of a positioning unit—an air-operated plunger attached to the Varidrive speed-changing device, and an air valve which remotely controls the positioning unit. Four types of valves are available depending upon the method desired to operate the mechanism—pedal, lever, cam or wheel. The positioning units are designed to operate with an air pressure of either 60 or 100 p.s.i.

Through the use of check valves and control station selectors in the system, the speed of the drive can be changed from any number of control stations. Conversely, any number of drives may be controlled by one station, providing they are to operate at the same speeds.

If desired, the pneumatic control may be used to provide speed changes from one pre-set finite speed to another by one quick movement, allowing the minimum amount of time and effort on the part of the operator, it is pointed out.



Air-Atomizing Burner

Announcement is made by Orr & Sembower, Morgantown Road, Reading, Pa., that the air-atomizing burner

ELWELL-PARKER *Rotating* ROLL PAPER CLAMP

SUPERIOR FEATURES like these

POSITIVE GRIP because clamp jaws have specially treated surfaces.

LARGER CONTACT SURFACES because jaws conform to contour of rolls over a 15″ range. Avoids stock damage.

360° ROTATION—For operation in close quarters, fixed jaw can be positioned on *either* side

ADJUSTABLE CLAMP PRESSURE for handling many papers—kraft, tissue, newsprint, etc.

FOOLPROOF OPERATION—On electric models, clamp pressure automatically maintained if operator leaves truck. Nor can roll rotate until clear of floor.

CONSTANT CLAMP PRESSURE—Check valve is primary device to hold pressure. On electric trucks, it is augmented by an automatic pressure pickup. Clamping pressure takes priority over other hydraulic functions.

As always, Elwell-Parker leads in functional refinements.

GIVE BENEFITS like these

MINIMUM MANPOWER—Truck and operator outperform a gang of laborers. Man-hour savings of 80% to 90% are frequent.

GREATER STORAGE—Truck stores rolls up to roof, either vertically or horizontally and absolutely snug because of off-center pickup. No dunnage strips or pallets needed.

NO STOCK DAMAGE—Many trucks have quickly repayed their cost by reducing spoilage to practically zero.

GET ALL THE FACTS

Write for **NEW FOLDER** on the E-P Roll Paper Truck. The Elwell-Parker Electric Co., 4192 St. Clair Ave., Cleveland 3, Ohio.

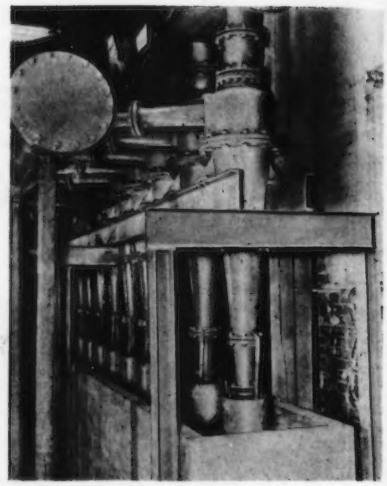
has been refined to simple components and trade-named the Voriflow burner. It will be used for efficiently firing their multi-pass package unit automatic boiler—known as Powermaster—where combustion must be accomplished in the confined chamber of an internal furnace.

In the illustration, oil flows through the central tube of the Voriflow and through individual perforations into the atomizing air stream. Atomizing air from annular space remaining within the outer tube is introduced into the combustion chamber across the oil streams through converging tangential slots machined accurately in the nozzle core.

Featured is the simplicity of the burner. The beryllium copper body holds the stainless steel cap over the multiple slots in the stainless steel core, forming converging flow paths for the atomizing air. Only about one percent of the total full load combustion air is thus admitted with the oil for atomization, which permits much closer control of the combustion air from the blower, and the resultant high efficiency at light loads. Fuel oil flows through the central oil tube and is picked up at multiple injection points by the individual air streams. The dams near the end of the oil tube are designed to prevent dripping after shut down. The beryllium copper body and the brass air tube conduct heat back to the plenum where it can be quickly dissipated at low temperature.

The excellent flame pattern and consistently clean combustion obtained with the air-atomizing unit, with light through No. 6 Bunker Coils over loads of from 30 to 100 percent, are held to have provided convincing proof of the flexibility of the burner.

Request Bulletin 1218.



Cyclonic Pulp Cleaner

Bauer Bros. Co., 1758 Sheridan Avenue, Springfield, Ohio announces that it has been building and installing the two types of cyclonic pulp cleaners invented by Hammermill Paper Co., Erie, Pa. and the Howard Smith Paper Mills, Ltd., that it now has acquired the basis U.S. and Canadian patents, and that the three companies are co-operating in obtaining improvement patents.

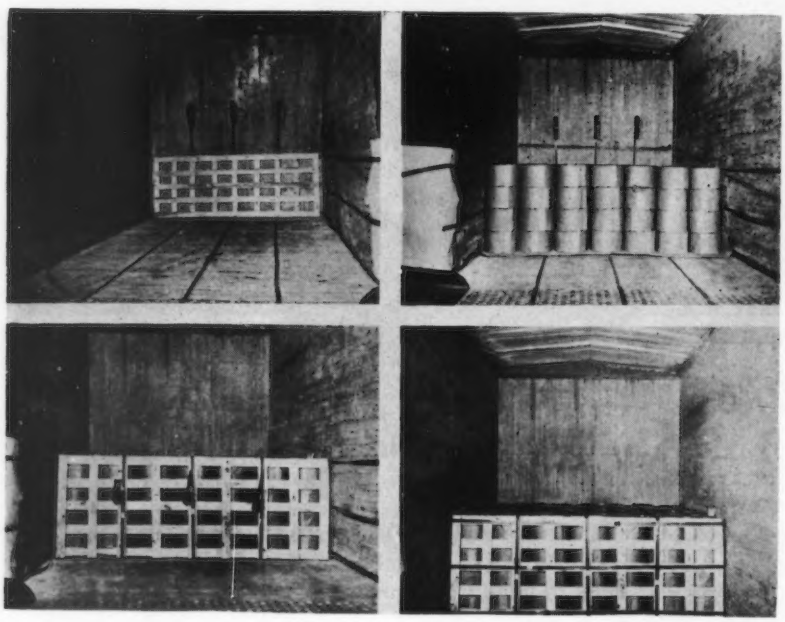
Trade-named Centri-Cleaners, both types of cleaners are alike in general design and employ the same principles. The Hammermill type is designated as No. 600 series, the Howard Smith type as No. 622 series.

The cleaner is a cone with a tangential inlet at the large end which is uppermost when in working position. As the pulp slurry enters this inlet under pressure from a pump, a rapid whirling motion is generated. This precipitates grit, bark, shives, pitch and other alien particles toward the walls of the cone where they spiral downwards until they emerge from the periphery of the nozzle at the bottom of the cone. Now, due to vortical action, a low pressure area is established at the center of the nozzle. This prevents emission of the fibrous content. Acceptable pulp is forced upward and ejected from the top outlet. There is no power application to the equipment itself.

Claimed for the unit is that it has the distinction of being sensitive to particles of different specific gravity, specific surface, size and shape than fibers.

The equipment is being used on bleached and unbleached pulps and can be installed in many different locations in pulp or paper mill. It is estimated that about 90 percent of the visible dirt can be removed by well-engineered Centri-Cleaner installations.

(Continued on page 42)



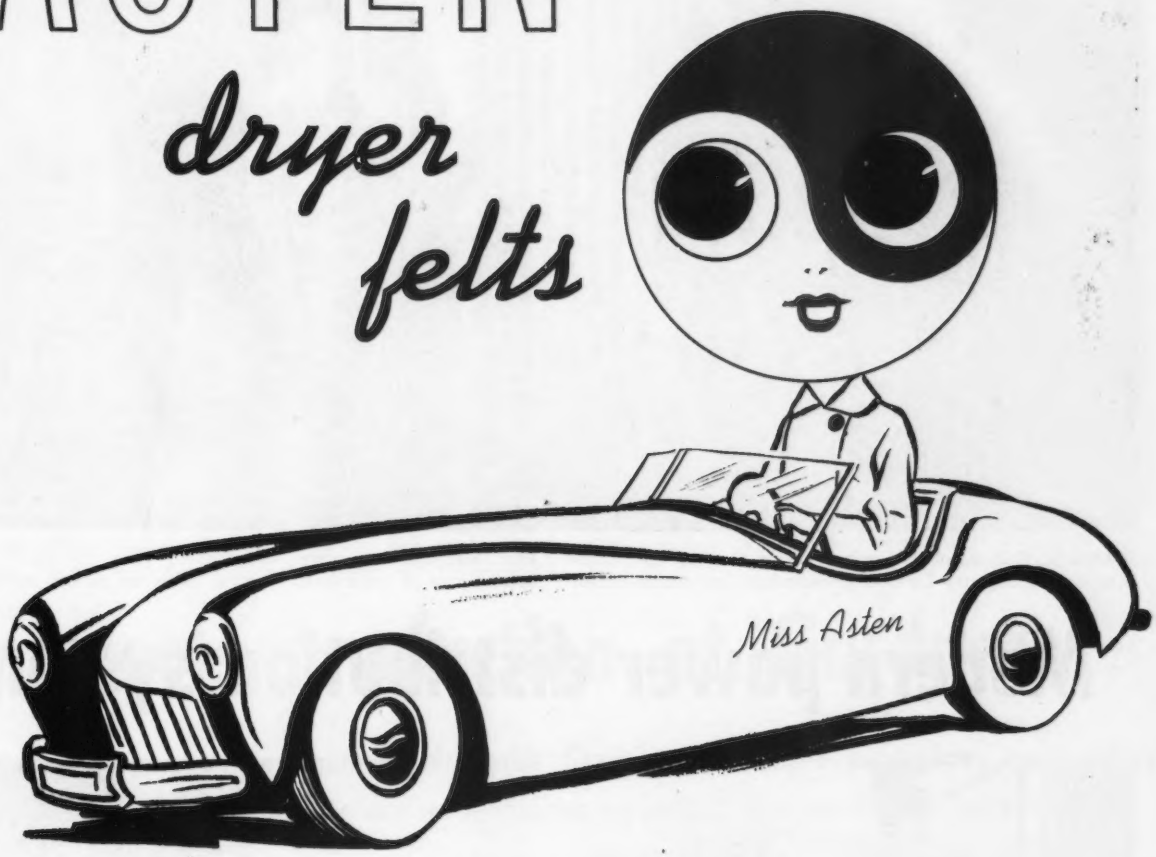
Steel Strapped Floating Loads Solve Waxed Paper Shipping Problem

By strapping its carload shipments into "controlled floating loads," Central Waxed Paper Co., Chicago, Ill. has virtually eliminated transit damage and cut loading time by 50 percent, it is said.

Top left: To prepare the car for floating load shipments of waxed paper rolls, Central Waxed takes three strands of 1¼ in. by .035 in. Unit-Load banding—product of Acme Steel Co., 2840 Archer Avenue, Chicago 8, Ill.—and passes them through controlades fastened to the sidewalls of the car. These will later be horizontal straps around the load. Next, three bands are laid on the floor, run up the rear wall and temporarily stapled. These will be vertical straps. The controlades are used to retard shifting of the load and absorb the initial shock of any impact. When all banding is in place, the rear wooden gate is set into position at car end. *Top right:* After placing strips of cardboard over controlades and along the floor to prevent scuffing, 10 rows of rolls are stacked four high in a 7-6-7 nested stowage pattern—odd rows 7 rolls wide, even rows 6 across. *Bottom left:* After each half-car unit has been completely stowed, the vertical straps are joined, tensioned and sealed across front gate. *Bottom right:* The bracing is completed by tensioning and sealing the horizontal straps.

ASTEN

dryer felts



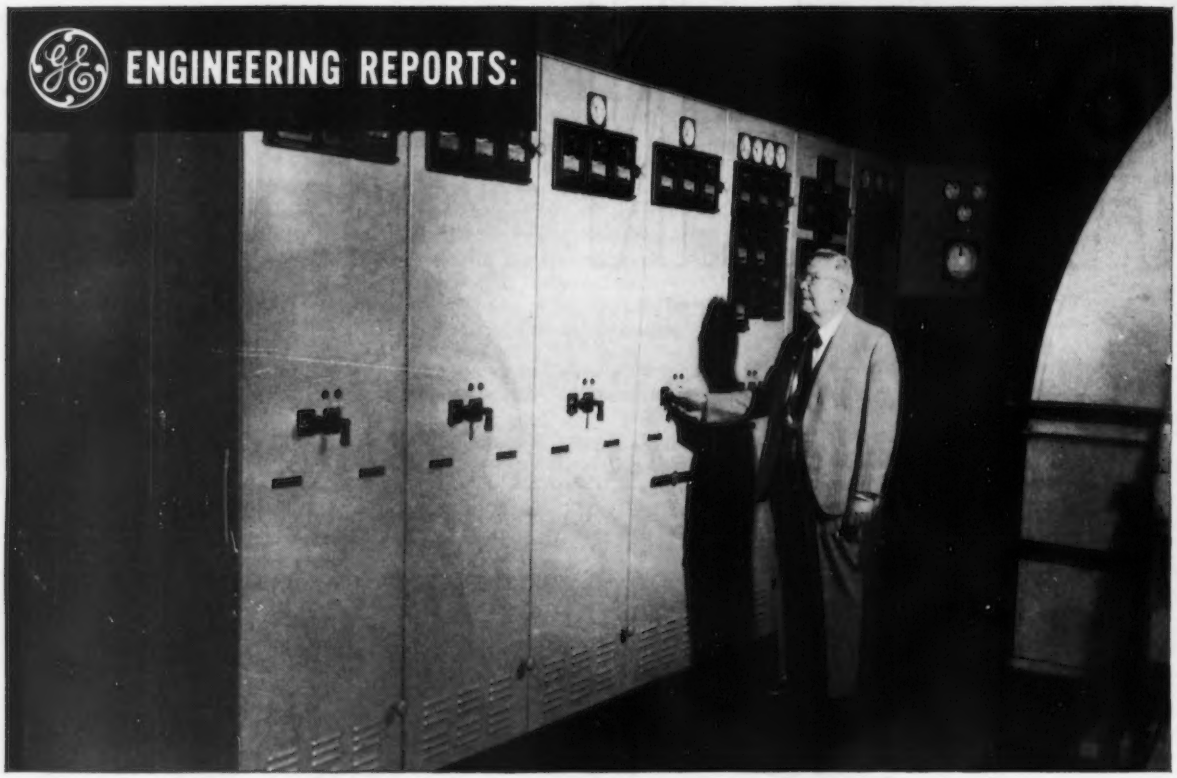
Obviously – custom built

From start to finish, everything possible is done to match ASTENS with individual grades and mill conditions. This infinite care is your assurance of superior performance and maximum endurance.

Economy in the long run

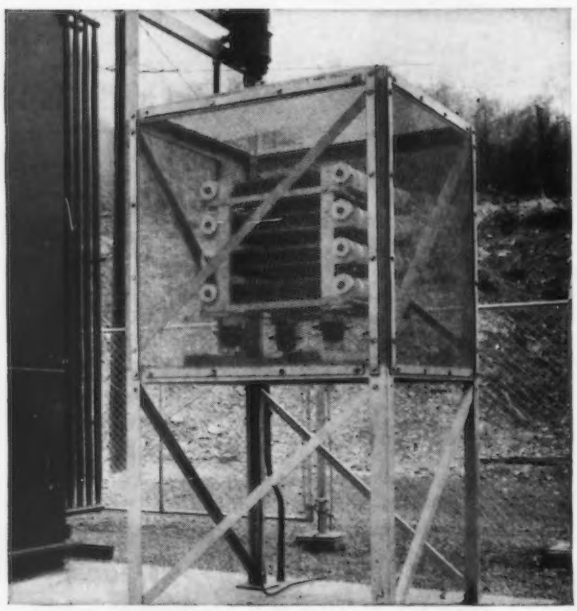
ASTEN-HILL MFG. CO.
PHILADELPHIA, PENNA.

ASTEN-HILL LIMITED
VALLEYFIELD, QUEBEC



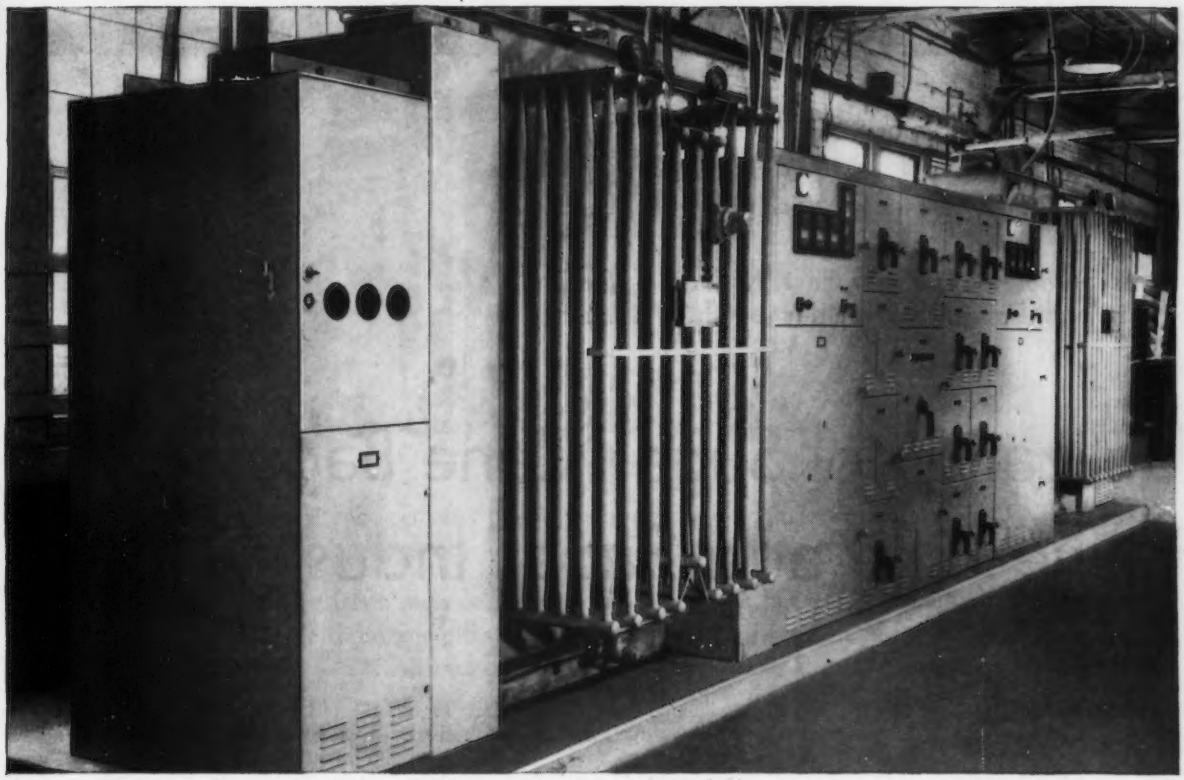
AMPLE IC. G-E metal-clad switchgear at Gardner has ample interrupting capacity for both present load and future expansion. Alfred Clegg, power house chief, likes the operating convenience of centralized control for main power circuits.

Modern power distribution system



NEUTRAL GROUNDING provides better over-all system operation. This resistor in the neutral of the 4160-volt system limits ground-fault current minimizing damage to equipment.

G-E APPLICATION ENGINEERS, with tools like this portable analyzer, can study your entire power system quickly—and recommend the proper system for your present and future load.



PROTECTS PRODUCTION. This 3000-kva G-E double-ended unit substation is one of two that insure against complete shutdown in stock preparation areas by providing an alternate 480-volt power source via secondary-selective arrangement.

protects production at Gardner

Secondary selective arrangement also adds flexibility for future expansion, more safety for personnel—neutral grounding minimizes equipment damage due to ground faults

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Gives Some Facts about Past Activities, Present Status and Future Possibilities of the . . . .

Utilization of Sugar Cane Bagasse in the Pulp and Paper Industry

Introduction

During recent years, as a result of the tremendous increase in the consumption of pulp and paper, and the resultant drain on the world's pulpwood resources, there has been a great amount of effort expended toward development of new sources of fibrous raw material.

In these investigations, the very large but comparatively untapped reservoirs of agricultural residues is being studied extensively and many commercial ventures in this field are going forward. Almost every known fiber has been tried for the manufacture of pulp and paper, and nearly every one will make a product having some desirable properties.

However, the mere fact that an agricultural residue can be suitably converted into pulp and paper technically is no indication that the operation will be feasible economically. There are a number of qualifications which such a raw material must possess in order to be considered. There must be an ample supply of the raw material and it must be available to the pulp mill in all seasons of the year. It must not deteriorate rapidly in storage. It must have a high yield of a fiber of high quality. The material must be concentrated in a small area. The costs of collecting and transporting the material to the pulp mill must not be excessive. The cost of converting it into pulp and paper must be reasonably low, and there must be an adequate supply of labor available in the area. Lastly, there must be a sufficient demand for the product at a price which will insure profitable operation.

Sugar cane bagasse is a material which satisfies the above conditions more nearly than any other crop fibre. It has a distinct advantage over other agricultural residues in that it involves no great problem of collection. The costs of collecting, crushing and washing the material are borne by the sugar extraction process, and the bagasse, when delivered to the pulp mill, is in excellent condition for further processing. It has been found that properly baled and stored bagasse will keep in good condition for extended periods of time without deterioration.

Then with all of these advantages just why has bagasse never found extensive use in the pulp and paper industry on a world-wide basis? There is indeed one great disadvantage. Although the fibers of bagasse are fine, strong and flexible, and are suitable for manufacture into many grades of paper, about 30 percent by weight of the dry bagasse consists of short, non-fibrous cells or pith cells. These cells have very low felting power, and are detrimental in every way to production of high quality pulp. If left in the pulp, they render it more difficult to bleach, decrease the rate of drainage on the paper machine, decrease the strength properties and make the product unsuitable for conversion into high grade paper. Digestion of the pithy material in cooking the bagasse consumes much more of the chemical than does the fiber, yet it yields but little chemical pulp. On the other hand, if the pith is removed and discarded, the yield of pulp from bagasse is entirely too low to permit economic production. Many investigators over the past 50 years have advocated separation of pith from the fibrous elements, but none has attempted to put such a process into commercial operation because there was no use for the pith. As a result of this, many mills have failed in their attempts to produce a salable paper from bagasse, because they sought a high yield by leaving the pith cells in the finished product.

In recent years there has been increasing effort to find uses for the pith from bagasse and some success has been attained. If the various proposed uses for pith prove sound, and an efficient and inexpensive method is used to separate the pith from the fiber, the total yield of usable material will be high and this objection to the use of bagasse as a raw material for paper making will be overcome.

In fact, the key to successful use of bagasse for production of pulp is an efficient and effective means of separating the pith from the fiber, followed by some economic use of the pith. Those mills which have been successful have found some solution to this problem.

In addition to the pith problem, in the United States the greatest single drawback to greater utilization of bagasse in the past has been over-zealous promotion of its use for production of products for which it was ill-suited, by people who lacked a complete understanding of its properties and limitations. Each failure of a poorly

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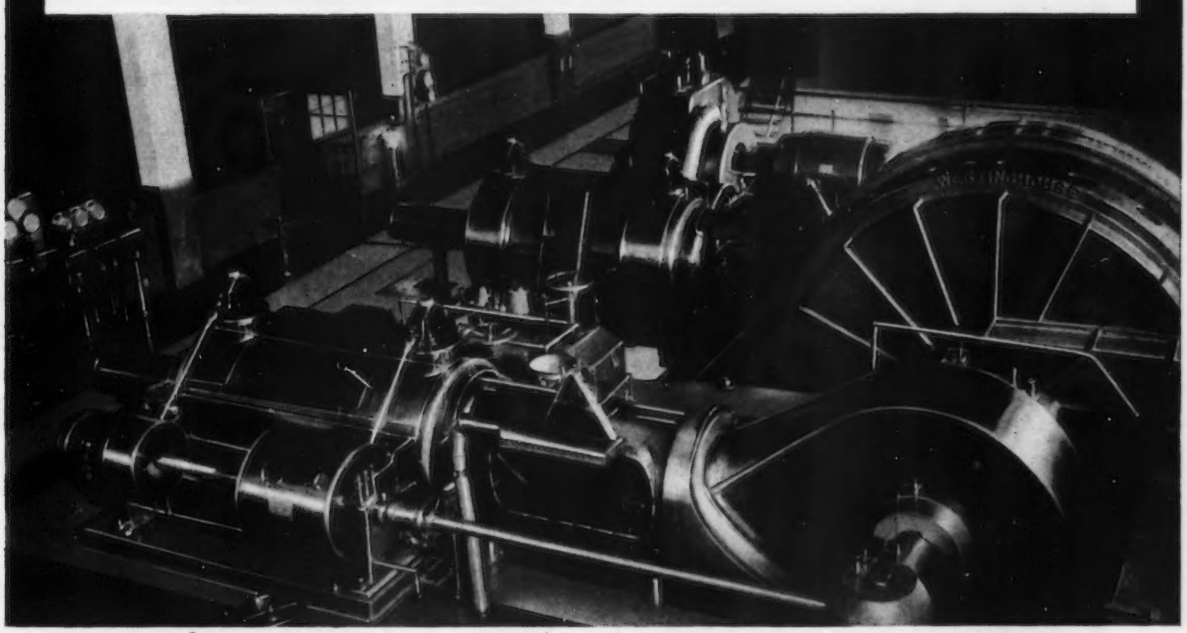

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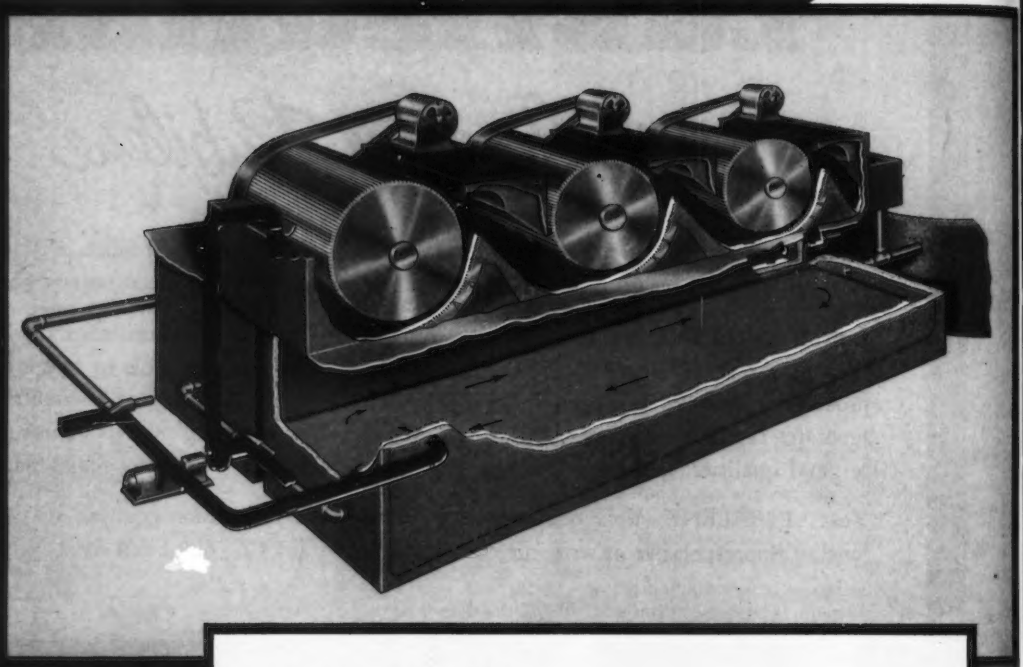

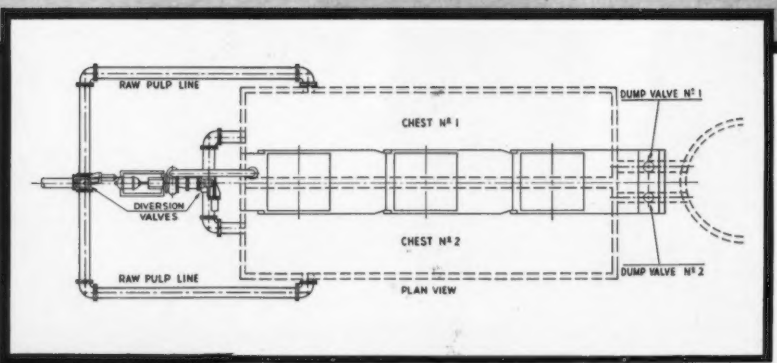

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planned venture in this field has held back progress for many years.

The idea of using sugar cane bagasse as a raw material is nothing new to the pulp and paper industry. The thought has crossed men's minds whenever fiber shortages have occurred during the past 100 years. A tremendous amount of experimental work has been carried out, hundreds of patents have been granted on processes for its utilization, and hundreds of articles have been published the world over. One process dates as far back as 1838.

Many of these reports have come from reliable and serious investigators with a thorough understanding of principles involved. These have appeared in the technical journals and have contributed worthwhile knowledge toward scientific progress in this field. On the other hand, many other reports, notably those involving much fanfare and publicity, have emanated from promoters with complete lack of knowledge in the field. Activities of this group through the years have been highly detrimental to progress toward large-scale commercial use of bagasse for production of pulp and paper.

In this report a summary is given of results of past experimental work which has been done on utilization of bagasse for pulp and paper, the early commercial attempts to put into practice the various processes developed for utilizing bagasse, the reasons for the failure of many companies in the past, the successful commercial enterprises in this field since 1938, bagasse pulp mills now under construction, the world-wide availability of bagasse and the possibilities for the future.

Historical Review

Experimental Work

As mentioned previously, a tremendous amount of experimental work has been done during the past 100 years in this field. In a survey made for the War Production Board during World War II on the possibilities of utilization of bagasse, more than 800 references are listed, including patents. Thus it would be impossible to go into all of the past work.

However, an historical review of the work of the more serious experimental work reported in the technical journals indicates that there is rather general agreement regarding a few basic facts. These may be stated as follows:

1. Except for production of coarse products, such as wallboard, corrugating board, or chipboard, it is absolutely essential to separate a high percentage of the pith from the bagasse fiber if a high quality product is to be produced from the fiber in modern high speed operations. This is particularly true if bleached pulp or paper is to be produced.

2. If the pith is first removed, the bagasse fiber itself is an excellent raw material for production of high quality pulp and paper products.

3. The pith-free fiber can be converted into high quality pulp without technical difficulty by any of the ordinary alkaline or monosulphite processes or well known modifications of these processes. No new so-called secret processes are necessary.

4. The matter of utilization of bagasse for pulp and paper, as well as the choice of process is greatly a matter of economics, depending to a considerable extent upon the specific location of the plant.

5. Although bagasse can be used alone for some grades of paper and paperboard, it will find its greatest value as a blending pulp to be used in combination with various grades of wood pulp. When utilized in this manner, it can be of great usefulness from both an economic and technical standpoint.

In spite of the above facts, during the past few years there have been frequent and much publicized secret processes for production of pulp, newsprint, paperboard, dissolving pulp and other products from bagasse. Furthermore, it has been claimed that all of these products can be produced without removal of pith from the bagasse. Unfortunately, most of the clamor has been concerned with production of newsprint using a 100 percent bagasse chemical pulp furinsh. This is perhaps the one use for which sugar cane bagasse is the least suitable from both a technical and an economic point of view. On the other hand, if used as a blending pulp as part of the newsprint furnish, bagasse may have some real merit.

Attempts to Use Bagasse Commercially Up to 1938

Unfortunately, in almost all of the commercial ventures in this field (and there have been many all over the world), until about 1938 attempts have been made to produce a salable paper while leaving the pith with the fiber. All of these attempts have failed, with the exception of those which involved production of wallboard or low quality paper and paperboard.

The date of the first reported commercial use of sugar cane for paper stock is about 1844, when some bagasse was shipped to France from the Island of Martinique, although one proposed process for its use dates back to 1838. That paper made from bagasse was considered to have some value is probable, because patents in the late forties and fifties, calling for certain papermaking processes, mention bagasse among the raw materials.

At the bottling plant of the Cerveceria Lima (Lima Brewery) liter bottles of high quality Peruvian beer are packed in cartons manufactured from a pulp containing a high percentage of sugar cane bagasse—formerly an industrial waste now utilized in the manufacture of a wide variety of paper products. The "paper-from-bagasse" process developed by engineers of W. R. Grace & Co. more than a decade ago was the first commercially successful process for utilizing bagasse in the manufacture of paper. The Paramonga Paper Mill which produced the liner and corrugating medium for these cartons is operated by a subsidiary of W. R. Grace & Co., international industrial and trading concern.

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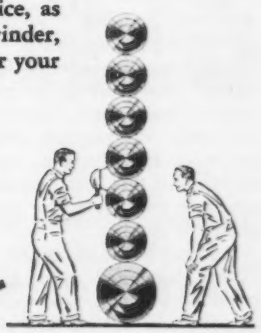

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In about 1856, Thomas Rutledge in England carried out a series of experiments with the view of producing a commercial substitute for rags; bagasse was one of a number of materials tried. His results indicated that the fiber from bagasse was well adapted to papermaking purposes. However, because of the facility of collecting esparto grasses by cheap labor in North Africa, it was decided that esparto was the most favorable substitute.

In the sixties and seventies, several reports were made of the use of bagasse for production of newsprint in the U. S. Experimental runs were made and newspapers were actually printed on this bagasse paper in much the same manner as today. All of them failed to make successfully a merchantable paper.

Much bagasse was shipped to Northern mills where experiments were carried on for the manufacture of paper. Mills were projected in 1880 for Milford, Pa., on the Bayou-Teche, La., and at Capt May, N. J., in 1881. In July, 1887, the local *Ottawa Kansan* bragged: "Ottawa is to bear off the honors of having the first mill in the State to make white paper. Bagasse is to be used as a raw material."

The *Western Paper Trade Journal,* 1884, contained an article welcoming this new fiber for papermaking. This article in part follows:

"Recent experiments have demonstrated that very good paper can be made from bagasse. The *New Orleans Picayune* was recently printed on paper made from bagasse, and in making mention of this fact remarked that this opens a new field for investment of southern capital."

As a result of these promotional efforts, combined with a high sounding publicity campaign, several mills were constructed in various parts of the south in the eighties. Many mills were planned and a few actually built in or near New Orleans. All of them failed to make successfully a merchantable paper.

In 1879, *Lockwood's Directory* announced the building of a mill by the Sugar Cane By-Products Co. to have eight digesters and produce chemically 50 tons per day of bagasse pulp for papermaking. The *Paper World* of June 1880 stated that a mill was soon to be built in New Orleans to make pulp from bagasse. In October of the same year they reported a mill to be built by J. Spear in New Orleans to make paper from banana fiber.

About the same time, the *Paper Trade Journal* told of a mill that was planned for New Orleans by the North and Central American Fber Co. In 1882, the Louisiana Fibre Working Co. was organized and built a mill in which many unsuccessful attempts, over a period of five years, were made to make paper from bagasse.

One of the earliest bagasse mills was the National Pulp, Paper and Cordage Co. at Marraro, which was reported by *Lockwood's Directory* to be making 1400 pounds of soda pulp per day from Louisiana cane.

Another mill in Louisiana was the Louisiana Fibre Working Co. in the parish of La Fourche. This mill was built to produce bagasse pulp for papermaking.

In 1884, a mill was built on the Belmont plantation in St. James Parish, 60 miles north of New Orleans, which was reported to be making two tons of paper from bagasse per day. In 1892, the Baton Rouge Sugar Co. started to build a mill to make wrapping and express paper from bagasse.

In 1899, C. Tenant Lee began experiments on paper from bagasse obtained in Louisiana and Cuba. An experimental plant was maintained in Boston which ran for a year and a half. Because of the difficulty in bleaching and the great shrinkage, Lee concluded that a better field lay in manufacturing pressboard, and a Boston company erected a plant in Louisiana in 1907; this operated for about two and one-half years and turned out pressboard under a patented process, which gave a high yield of coarse material of dark color. This material proved satisfactory, but various factors brought failure to the company and the price of this particular class of board was so low that there was no incentive to start the mill again.

In 1900, H. H. Cunningham and Co. built a mill for the purpose of utilizing bagasse in making a cheap grade of paper. This was sold locally in Texas and Louisiana and seemed to be in demand by butchers and fish dealers, who stated that it was the best thing of its kind they had used.

From 1903 to 1905, Viggo Drewsen of New York carried out an extensive series of experiments on bagasse at the mills of the S. D. Warren Co., Cumberland Mills, Maine. As a result of these experiments, Drewsen was granted a number of patents; he succeeded in producing a good grade of paper, but his process required from three to four tons of bagasse to make one ton of paper. Furthermore, the expense of bleaching was so great that nothing has ever been done with this process.

In 1908, a company started a bagasse mill in Rio de Janeiro, Brazil, using the process employed at the Louisiana board mill above mentioned. For three years they turned out about one ton of paper per day, which sold at $100 per ton; the price was due to the high Brazilian tariff and not to the quality of the paper.

In 1908, arrangements were made for commercial tests on bagasse from Cuba at the Hollins Mills, of the Wall Paper Manufacturers, Ltd., at Darwen, England. About 200 tons of bagasse were manufactured into book paper without admixture of other fibers. These papers were fully up to the standard of certain characteristic writing papers.

In 1911, Hans Wrede in a German report referred to a small paper mill in Costa Rica which was using bagasse as a raw material.

In 1915, wrapping paper was successfully manufactured in Preston, Cuba, from bagasse. The work was done under the direction of the University of Wisconsin laboratories, and the mill was directed by graduate students. Four tons of paper were produced per day. The small size of the mill, the increasing cost of chemicals, and the low-grade product, all contributed to failure of the mill; operation was discontinued after a few months.

In 1917, the Sugar Cane By-Products Co. came into prominence when it launched a widely advertised campaign inviting subscriptions of its stock. It claimed to have a mill in the course of erection at New Iberia, La., which was to convert bagasse into pulp according to a process patented by M. W. Marsden. In their prospectus, there appeared a number of glowing possibilities which were truly amazing to those having the barest conception of the cost of making pulp and paper. This was apparently merely a stock selling proposition, because there was practically no production from the mill, and it failed after a short time.

About this time, Arthur D. Little, Inc., conducted an extensive investigation of the possibilities of making paper from bagasse. This work was carried out in their semi-commercial pulp and paper mill over the period 1912 to 1918. Most of their early work was conducted on Cuban bagasse, on behalf of The United Fruit Co. However, in 1917 and 1918, Arthur D. Little extended this work on behalf of The Hawaiian Sugar Planters Assn. to make a thorough technical and economic study of the possibilities of using Hawaiian bagasse for production of pulp and paper.

A great variety of good quality bagasse paper was produced on the Arthur D. Little semi-commercial paper machine and the samples were submitted to jobbers. Opinions expressed were favorable. However, the economic and market conditions at the

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time were not favorable to commercial ventures. They did come to the conclusion that technically there were no difficulties which could not be overcome.

One of the most successful early attempts to use bagasse was in the production of mulch paper at Olaa, Hawaii. This mill began operations in 1919 for the production of asphalt saturated felt for mulch paper. The mill used the old line process for small scale production of a low quality product. Although the size and type of this operation seems to have been against its success, they did produce a satisfactory mulch paper which was used at the Olaa plantation for several years.

After several years of operation of this mill, a decision was made to discontinue the use of mulch paper at Olaa. Therefore, the paper mill operations were discontinued.

In 1920, the Celotex Corp. had its beginnings in Marrero, La. This company was the first to produce successfully and commercially products manufactured from bagasse, and it has steadily expanded until its operations are now very extensive, producing large quantities of building board, insulation, acousti material, etc., which is marketed in practically every country in the world.

The success of the Celotex Corp. appears to be largely due to the extensive scale of their operations and the availability of large supplies of bagasse close at hand. In addition, they are making a product of very high yield by means of a relatively inexpensive process and they have had highly aggressive technical and sales staffs.

In 1928, a mill was erected at Tuinucu, Cuba, by Cellulose Cubana which was to produce 40 tons of dissolving pulp per day by the De la Roza process. Many economic advantages were claimed and the mill was to be enlarged to a capacity of 120 tons. It was reported by De la Roza to be producing a high grade of alpha cellulose adapted for manufacture of rayon and similar high quality products and high grade paper. Although it was claimed that the pulp was of higher quality than other dissolving pulps, and that it could be produced more cheaply than those pulps could be produced from wood, this mill was never successful and has long ago gone out of existence.

According to an article in the *Paper-Maker* in 1932, it was proposed to erect a fiberboard factory in Jamaica in which the Vascane process was to be used. However, if this mill was actually constructed, it is not being operated at the present time.

In 1932, also the Hawaiian Cane Products Co. began operations for production of insulating board from bagasse, following the highly successful venture of The Celotex Corp. Although originally built and owned by the sugar interests, this mill is now operated very successfully by the Flintkote Co. for production of a great variety of structural insulating boards.

An analysis of the above mentioned historical attempts to utilize bagasse for manufacture of pulp and paper up to 1938 or 1939 reveals the fact that the only successful commercial enterprises established were the wallboard mills. In fact, the most successful use of bagasse to date has been in the manufacture of insulating boards. One of the principal reasons for the success of bagasse in this field is that an extremely high yield (80 percent or above) of a high quality product can be obtained by means of relatively low cost mechanical operations. In this respect the operation is similar to production of mechanical pulp from wood, where a yield of 90 percent is obtained by means of a simple mechanical operation.

Some reasons for failure of these early attempts to produce pulp and paper, other than wallboard, from bagasse are given below:

Reasons for Failure of Early Attempts

There have been numerous reasons given for the failure of these early attempts to manufacture pulp and paper from bagasse. However, it has usually been a combination of insurmountable difficulties which led to the final failure.

In the early attempts, failure was due in many cases to the inability to produce a marketable grade of paper at a price sufficient to offset the costs. This was caused by a lack of knowledge of the characteristics of bagasse as a papermaking material, a lack of knowledge of the type of product to be expected from the processes used, or an attempt to convert it into a grade of paper to which it inherently was ill adapted. This was particularly true of attempts to convert it into newsprint.

In the early attempts in Louisiana and Texas, the pulp appeared to be gummy and it stuck to the cylinders of the paper machine, thereby causing continual breaks. Instead of gums causing the trouble in these mills, it was probably caused by the pithy material in the bagasse, which formed a sort of mucilaginous material as a result of mechanical and chemical treatment.

Some investigators attributed the early failures to a lack of knowledge of the anatomical structure of the sugar cane. According to them, sugar cane possesses three kinds of fibers: those of pith, of the middle layer, and of the outer layer. The first are quite supple, but the last are lignified and hard. In the above mentioned processes the pith fibers, which constitute about 30 percent of the whole, were lost in the wash waters, so that the operation was not very economical or remunerative.

Thus, when attempts were made to remove the pith either before or after the cooking operation, since there was no use for the pith, the yield was so low that economic operations were impossible. On the other hand, when these early companies attempted to get a higher yield by leaving the pith in the final product, the resulting paper was so low in quality that it was not merchantable.

Another important cause of failure was the difficulty of insuring a steady and sufficient supply of the raw material. The entire supply in most areas is produced during the short cane-crushing season of 60 to 90 days, and the removal and storage of this large amount of bulky material presented great difficulty. Means of preservation of the fiber were not then known, and it was even thought by some investigators that only fresh bagasse could be utilized in papermaking, thus limiting production to the short crushing season. This lack of knowledge of methods of handling bagasse caused its cost to be very high, although its only other use was as a low-grade fuel.

In many cases, the small size of the mill was a contributing factor in its failure, because the production was so small that good efficiency could not be obtained.

An inadequate supply of competent labor contributed materially to the failure of many of the ventures. The location of the mills was such that all the skilled labor had to be brought from other parts of the country, because at that time there was scarcely any paper industry in the south.

Successful Commercial Use of Bagasse from 1938 or 1939 to Present

It was about 1938 or 1939 that successful commercial attempts began to materialize for production of pulp and paper from bagasse in various countries of the world. This period was preceded by rather intensive experimental work including work in The Philippines, Japan, Peru, England, Argentina, Hawaii and various parts of the United States.

As a result of the work during this period and since that time, a much better understanding has been obtained of the problems involved in production of high quality pulp and paper from bagasse. Consequently, mills which have been built during the past 14

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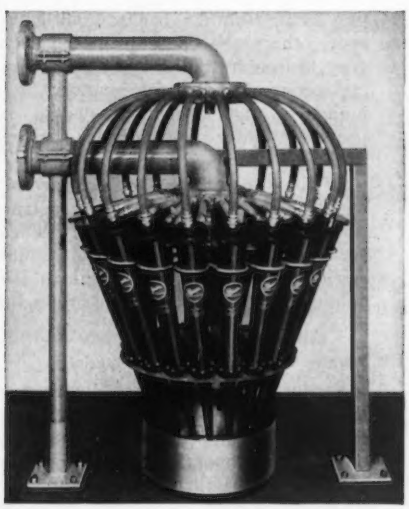
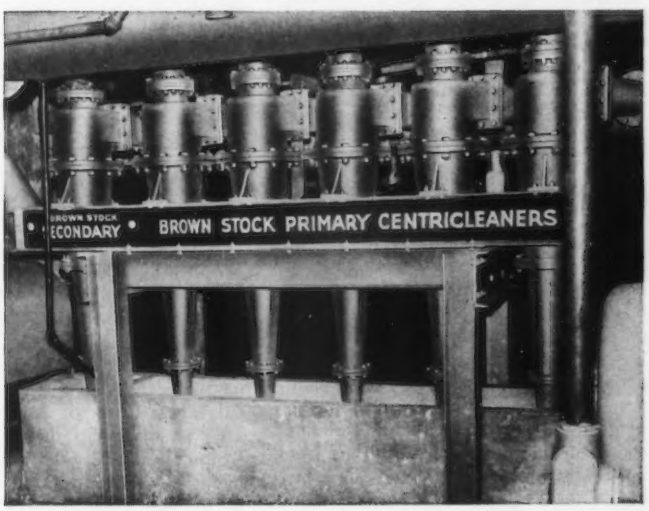
Impressionistic drawing of the flow in the Centri • Cleaner.



A 20-unit battery of Bauer No. 600 Centri • Cleaners (Hammermill type) in circular arrangement, all connected to single inlet and outlet manifolds.



An installation of Bauer No. 622 Centri • Cleaners (Howard Smith type) handling pulp slurry from knotters. Note that five are hooked up together in the primary group for the first pass. A single one handles the second pass; that is, it reworks the rejects from the primary group. Capacity of this compact assembly of Centri • Cleaners is 250 tons per day.

THE BAUER BROS. CO.
Established 1878

1758 Sheridan Ave.
Springfield, Ohio

years have started off on a sound basis from both a technical and an economic standpoint. Furthermore, they chose end products for which bagasse is a suitable raw material. Thus several mills are now in operation for commercial production of bagasse pulp and paper.

The successful commercial ventures since 1938 are as follows:

1. *Pilot Plant of Cellulose Development Corp. in England.* In 1939 an elaborate pilot plant was constructed at St. Paul's Cray, Kent, England, by the Cellulose Development Corp. for treatment of bagasse (among other fibrous raw materials, principally straw) by the Celdecor-Pomilio process. This pilot plant is still in existence and produces about five tons of bleached pulp per day from straw, bagasse, or other fibers. It has served to obtain background data and for development of new equipment for construction of a number of commercial plants over the world which use agricultural residues, including bagasse.

2. *The Bagasse Pulp Mills of the Taiwan (Formosa) Pulp and Paper Corp.* After extensive experimental and pilot plant work, during occupation of Formosa by the Japanese, two bagasse pulp mills were established which successfully used the acid magnesium sulphite process. One of these mills, the Taiwan Pulp Manufacturing Co. was located at Tatu, Taichung, and the other, called Ensviko Pulp Co. was at Hsinying, Taiwan. The Tatu mill started operations in 1939 and the Hsinying mill started in 1940 with capacities of 50 and 100 tons of bagasse pulp per 24 hours, respectively.

Both of these plants were put out of operation during the war by allied bombing.

Since the war, the Taiwan Pulp and Paper Corp. has put the Hsinying mill back into operation for production of bleached bagasse pulp. This mill began operations again in 1947, but it has not yet been able to reach prewar production levels. The plant has abandoned the use of the magnesium base acid sulphite process and has adopted the monosulphite process, with a small concentration of caustic soda as a buffer.

A great variety of papers are being produced using a rather high proportion of this bagasse pulp.

3. *Bagasse Pulp and Paper Mill at Cia de Cellulose de Filipinas, Negros, Philippines.* In 1941, following five years of work by the Compania General de Tabacos de Filipina, a small integrated pulp and paper mill was started up at Bais Central in the island of Oriental Negros in the Philippines. This mill used the continuous Celdecor-Pomilio pulping process of the Cellulose Development Corp.

This mill was in operation only a few months before the Japanese invasion. However, during that time, about 1500 tons of bank-note and bond papers were produced which contained more than 90 per cent bleached bagasse pulp. The Japanese invasion forced a shutdown of this mill and it was not opened until April, 1949.

This Philippine mill is now in operation at full capacity, which is only 15 tons per day. They use a dry method of separating pith from fiber and return the pith to the boiler plant. The fiber is then cooked and bleached by the continuous Celdecor-Pomilio The bleached pulp is converted into white lightweight bonds and writing papers on a 92 inch Pusey and Jones Paper machine.

In addition to the paper, this mill also produces about 10 tons per day of low quality paperboard on a small cylinder machine.

4. *W. R. Grace Plant at Paramonga, Peru.* In 1939 the W. R. Grace Co. began operating Peru's only pulp mill and largest paper mill, using bagasse as the principal raw material. This mill has operated successfully since that time and by blending the bagasse pulp with various grades of wood pulp, a great variety of papers and boards have been produced, ranging from airmail tissue to heavy board. Total production of bagasse pulp at this mill is now about 10,000 tons per year, and the company reports that the operations are highly profitable.

5. *The Ebro Mill in Argentina.* A mill for making low quality pulp and paper from bagasse has been in production at Villa Ocampo, Santa Fe, Argentina, since 1943. This Ebro mill is affiliated with the Cia Industrial del Norte de Santa Fe, owners of the Arno cane sugar factory, near which it is situated. It is reported that this mill produces 25 tons of pulp per day, and 10 tons of paper.

6. *Container Corp. of America Mill at Cali, Colombia.* For several years Container Corp. of America has operated a small paperboard mill in Cali, Colombia, Valle del Cauca, which uses bagasse. They produce about 15 tons of bagasse pulp per day and mix this with wastepaper and wood pulp for manufacture of various grades of paperboard. This operation has been very successful.

7. *Compania Celulosica y Papelera del Norte, S.A., in Cayalti, Peru.* During early 1952 a second bagasse pulp and paper mill began operations in Peru. As mentioned in paragraph 4 above, W. R. Grace has been producing bagasse pulp there since 1939. The new mill, located at Cayalti, Peru, is also a small mill with production capacity of 25 tons per day. It was built in combination with a new sugar mill so that completely integrated operations can be carried out. It is reported that various grades of wrapping papers in colors are being produced at this mill.

8. *Rohtas Industries Ltd., Dalmianagar, Bihar, India.* Encouraged by the success of the Philippine plant, the Dalmianagar organization in India completed a plant in 1951 for production of 24 tons per day of bleached bagasse pulp. Although some difficulty was experienced in the initial start-up of this mill, it is now running very successfully after only a short period of time. It is using the continuous Cellulose Development Corp. process for production of the bleached pulp.

9. *Sao Paulo, Brazil.* Refinadora Paulista, S.A. Sao Paulo, Brazil, is building a complete pulp and paper mill to use bagasse as the principal raw material. This mill should be in operation during 1952. They are also using the Celdecor-Pomilio continuous process which is being promoted by the Cellulose Development Corp. in England. Production capacity will be about 25 tons per day.

10. *Other Mills in Prospect.* Almost all countries in the world which have bagasse available have proposed projects for construction of pulp mills during the past few years. Many of them are being proposed by promoters with little or no technical background. However, others are being proposed after very thorough studies of the technical and economic problems involved have indicated that operations would be profitable under the conditions existing in the particular country.

At the present time projects are being considered, or are under construction in Egypt, Argentina, Puerto Rico, Hawaii, Louisiana, Mexico, South Africa, Jamaica, The Dominican Republic, Cuba and other can producing areas.

Bagasse Chemical Pulp for Newsprint

Recent proposals for utilization of bagasse chemical pulp for 100 per cent of a newsprint furnish are nothing new. Such proposals have periodically appeared with much fanfare and publicity for almost 100 years. In many cases editions of newspapers have been printed on this paper and great claims made regarding its high quality and low cost. In spite of these facts, no large scale bagasse newsprint mill has been constructed on the basis of using sugar cane bagasse as a raw material. In every case, after a thorough economic and technical appraisal has been made of these proposals, it has been concluded that bagasse newsprint could never be produced economically

Photo courtesy Magnus Metal Corporation, Fitchburg, Mass.

Can Inconel Screen Plates Reduce Your Replacement Costs?

Nearly nine years ago, a Canadian mill decided to see if they could get longer service life from screen plates. Up to that time, the best screen plates tried had failed through corrosion or fatigue, after only about a year of service.

Then, in 1943, they tried screen plates of Inconel®. Today – *nearly nine years later* – these Inconel plates look as good as new.

This long plate life can be credited to two outstanding characteristics of Inconel – exceptional resistance to fatigue and corrosion by mill stocks.

Inconel is virtually unaffected by chemicals used in the pulp and paper mill. And – because Inconel does not readily work-harden – it is capable of withstanding severe vibration and shock which often cause other metals to fail through "fatigue."

For further information about Inconel screen plates, write directly to Magnus Metal Corporation, Fitchburg, Mass.

Right now the INCO Nickel Alloys are on extended delivery because so much is needed for defense. So, it's wise to anticipate your needs and place your orders (with necessary N.P.A. ratings) with your INCO distributor well in advance.

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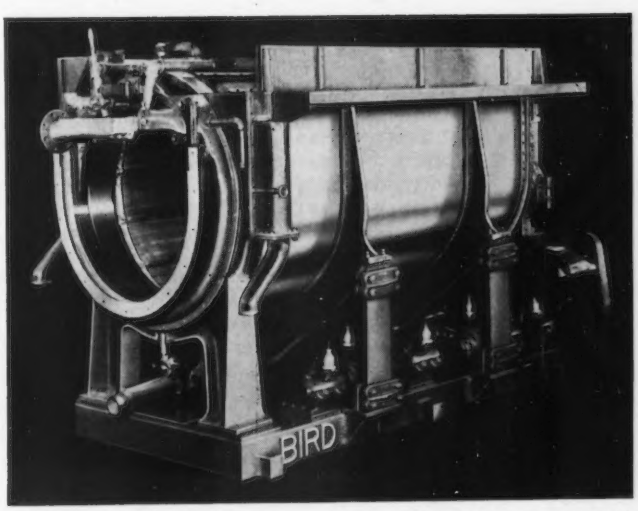
67 Wall Street, New York 5, N. Y.



Inconel screen plates in position on a Bird machine. Photo courtesy Bird Machine Co., South Walpole, Mass.

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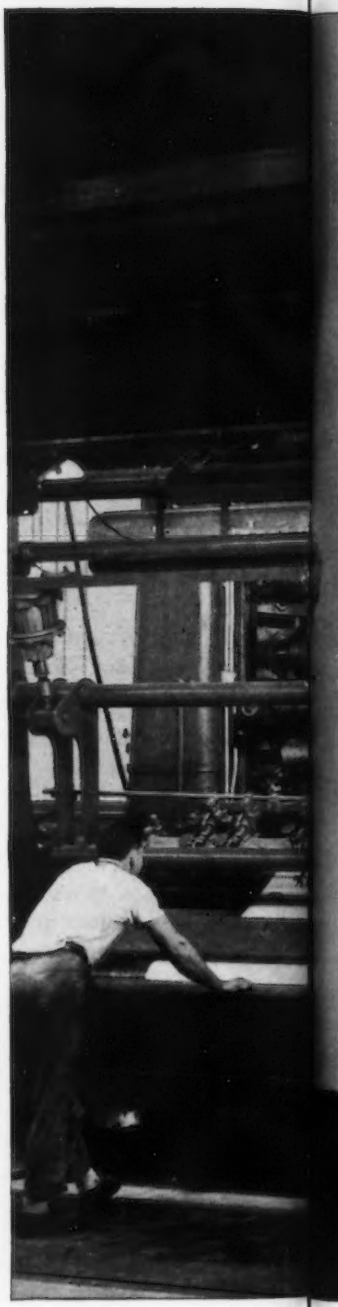
How to get more production and lower costs on your supercalenders



This new supercalender in a big New England mill produces at 1500 fpm —more than twice as fast as their older machines. But that's not all. It requires one less man to run it, broke is substantially reduced, and maintenance and operating costs are down. Much of this is due to their Westinghouse drive with electrified unwind and windup stands.

Drive makes high speeds practical

The Westinghouse drive holds paper tension constant from unwind to windup, and through all speed changes from starting to full speed. This prevents calender cuts and sheet wrinkles even at high speeds. Moreover, the tension at the windup is *gradually decreased* automatically as the roll builds up. This "tapered tension" results in highly uniform, soft rolls.

Controls make operation simple

Because operation of this drive is so simple, only two men are needed on the machine instead of the three normally required. The operator runs the whole machine from his centralized control panel (behind the ladder at right). He has a complete set of instruments to show paper tension, motor speed and load.

Drive reduces maintenance, saves power

Another important feature of the drive is the elimination of mechanical braking. Electrical "regenerative" braking not only does away with this heavy maintenance item but actually *feeds power back into the system* when the brakes are applied. The drive also has no friction clutches or mechanical transmissions so it stops all that maintenance.

Call Westinghouse early on your next project

If you're planning to buy a new supercalender or modernize your present machines, find out more about this drive. And remember this is just one example of the many outstanding Westinghouse developments for your paper mill. Before you build, expand or modernize, be sure to check your nearby Westinghouse office for ideas.

Learn more about Westinghouse drives

This free booklet tells how you can improve your finishing operations, how you can boost production and cut costs. Write for B-4038, "Westinghouse Drives for Paper Finishing and Converting Machinery". Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-94912

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EQUIPMENT FOR PAPER PRODUCTION

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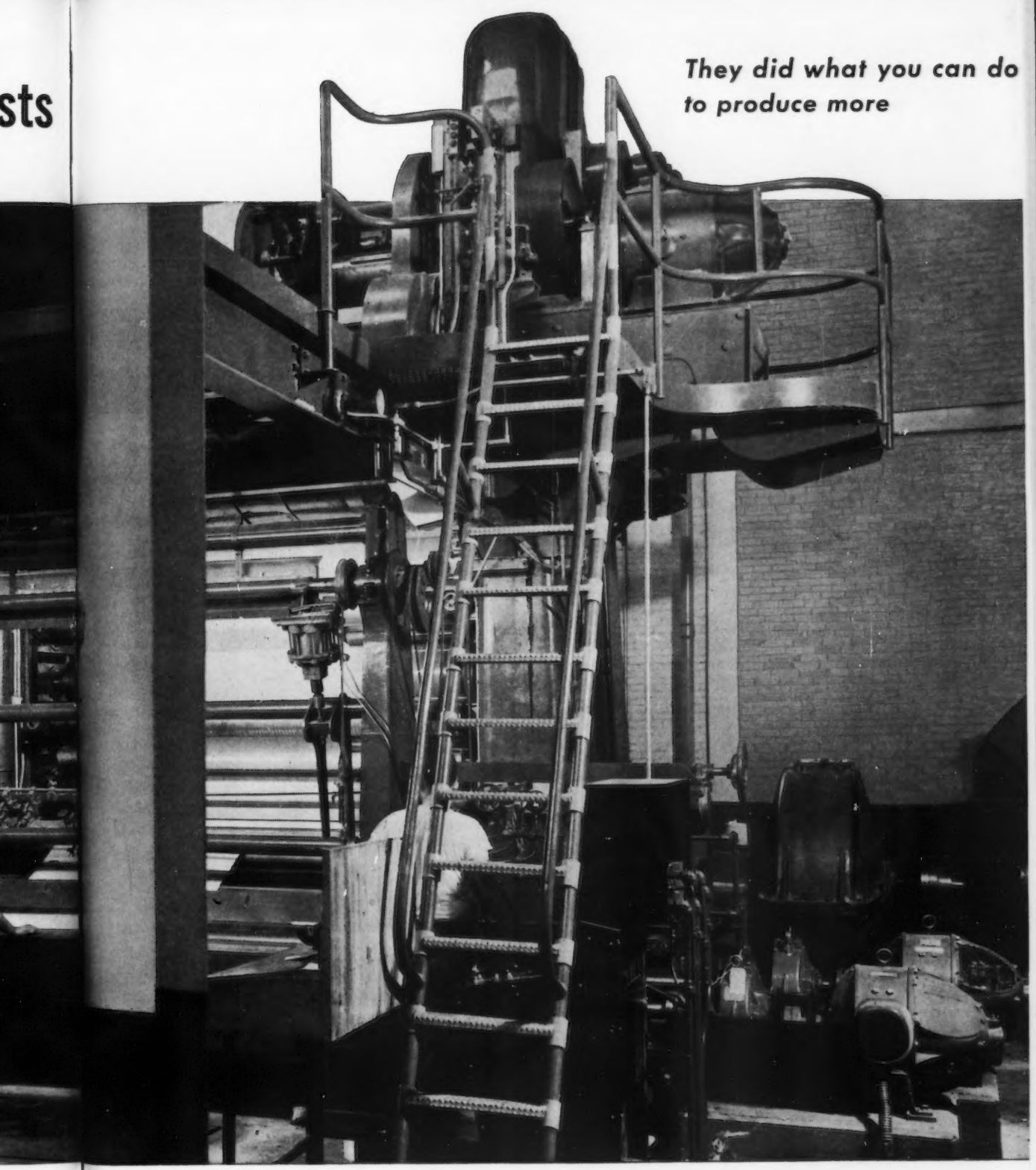
They did what you can do to produce more



The new Appleton supercalender with Westinghouse drive. At top is the unwind drive. Main stack drive is against the wall and drives for the two-drum windup are in front of it. All three drives are co-ordinated electrically so that paper tension is held constant all the way through.

in competition with newsprint made from the standard furnish consisting of 85 per cent low cost mechanical wood pulp, and 15 per cent chemical pulp.

The present claims regarding high quality, low cost newsprint from bagasse reminds one of similar experiments and claims made years ago. Some of these early experiments and claims are related below:

1. In 1856, Henry Lowe of Baltimore, made an experiment with southern cane and produced a creditable specimen of paper which was used in printing the *Baltimore Advocate.*

2. About 1875, one edition only of the New Orleans Daily Picayune was printed on a paper made of 50 per cent bagasse and 50 per cent rags.

3. The Western Paper Trade, of July 1884, contained an article welcoming this new fiber for papermaking; this article in part follows:

> "Recent experiments have demonstrated that very good paper can be made of bagasse. The New Orleans Picayune was recently printed on paper made of bagasse, and in making mention of this fact, remarked that this opens a new field for investment of southern capital."

4. In about 1870, owing to a shortage of cotton rags for a short period of time, experiments were carried out at Elkton, Md., resulting in the manufacture of several tons of paper from bagasse. This was made for the Philadelphia Public Ledger and was found to be entirely satisfactory.

5. In about 1908, Bert de Lamar started a plant on the island of Trinidad for making paper from a mixture of equal parts of bagasse and grass, or bamboo. He marketed it both in that island and abroad. At least one issue of the Trinidad Mirror was published on the paper from this mill.

Just as none of these experimental runs resulted in successful commercial production of newsprint from 100 per cent bagasse, it is predicted that the present promotional efforts along this line will result in failures. It is felt that newsprint offers one of the poorest opportunities for utilization of bagasse in the pulp and paper industry.

Newsprint is normally manufactured from 85 per cent mechanical pulp and 15 per cent softwood sulphite pulp, using the sulphite pulp merely to give sufficient strength to run the wet paper on the paper machines and to run the newsprint over the high speed printing presses. Mechanical pulp is by far the cheapest pulp to produce since no chemicals are used and a high yield of 90 per cent is obtained from the wood as contrasted to 45 per cent when producing chemical pulp. Therefore, when adequate wood and power are available, as they are in Canada and southern United States, it would be almost impossible for a paper made entirely from bagasse chemical pulp to compete with standard newsprint. No mill can be constructed based entirely on the abnormal market during times of scarcity.

It would be far better to use the available pulpwood for newsprint and use bagasse fiber for production of high quality paperboards and bleached pulps for which it is far better adapted.

However, as has been pointed out by Dr. E. C. Lathrop, of the Northern Regional Research Laboratory in Peoria, Ill., bagasse chemical pulp could be used very easily to replace the 15% or 20% chemical pulp which is used in newsprint. Extensive tests have shown that bagasse pulp can be blended with mechanical wood pulp for production of high quality newsprint.

Another method of using bagasse pulp as part of a newsprint furnish is to blend small quantities of it with old de-inked waste newspaper. This also results in a higher quality sheet of newsprint. However, even de-inking old waste paper is usually more expensive than production of mechanical pulp which constitutes 85 per cent of the standard newsprint sheet.

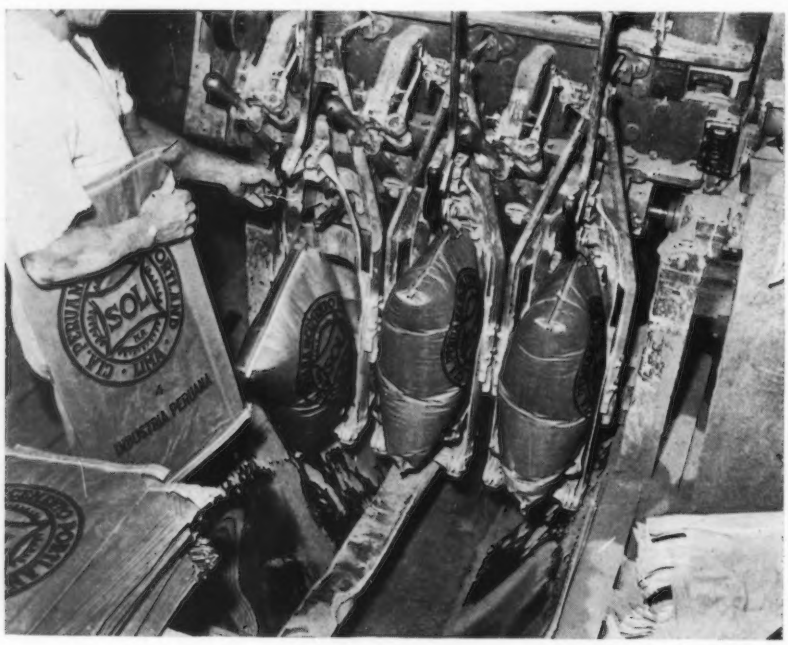
World Wide Availability of Sugar Cane Bagasse

Naturally sugar cane bagasse is available in all areas where cane sugar is produced. This includes countries both large and small all over the world. In areas where scientific agricultural methods are used, for each ton of raw sugar produced, one ton of bagasse (on a dry basis) remains as a residue. However, in areas where poor agricultural methods are used, or where the sugar content of the cane is low, as much as 1.5 tons of bagasse may be left per ton of raw sugar produced.

Then, as a conservative estimate of the total amount of bagasse available for all purposes, one might use the centrifugal cane sugar production figure as a base. Therefore, based on centrifugal sugar production figures, as given by the Office of Foreign Agricultural Relations, U. S. Department of Agriculture in the June 9, 1952 issue of "Foreign Crops and Markets," an estimate of the world-wide availability of bagasse is given in Table I.

It can be seen from *Table I* that total world availability of sugar cane bagasse from mills using the regular centrifugal process amounted to about 25 million short tons in 1951. This resulted from world production of 24,100,000 short tons of centrifugal cane sugar.

In addition to the centrifugal cane sugar, in many of the under-developed



Peruvian cement is one of the many products of Peru which are now packed and shipped in paper containers produced from a pulp containing a high percentage of sugar cane bagasse. Since 1939 the Paramonga Paper Mill, operated by a subsidiary of W. R. Grace & Co., international industrial and trading concern, has been producing an ever widening variety and increasing quantity of paper products. In addition to multi-wall bags such as those seen here the Mill also produces newsprint, corrugated containers, copy paper, grocery bags, and brown and colored wrappings.

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73% LIQUID	SOLID

Used in these products and processes:

wood pulp
soap
glass
chemical intermediates
phenol
resorcinol
naphthol
oxalic acid
indigo
sodium salts
pigments
aniline dyes
ceramics
pharmaceuticals
cosmetics
viscose rayon
cleaning compounds
reclaiming rubber
mercerizing cotton
reclaiming tin
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reclaiming paper
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and many, many others

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When you order chemicals from Hooker, you know that you are dealing with a reputable, dependable supplier. You can count on prompt deliveries, timed to fit your production schedule.

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New Chicago Office—To better serve Midwestern chemical users, Hooker has recently opened an office at 1 North LaSalle Street in the heart of Chicago's Loop. Midwestern users need only call Chicago, CEntral 6-1311, to receive fast shipment from the main plant at Niagara Falls. Hooker technical personnel will also be stationed at the Chicago office to assist you with your chemical requirements.

New plant at Montague, Michigan—In addition to the existing plants at Niagara Falls and Tacoma, Hooker is building a plant at Montague, Michigan which will increase chlorine and caustic soda production by 100,000 tons per year. Construction will be completed in 1953. This plant will further speed deliveries to Midwestern users.

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Table I

Estimate of World Availability of Sugar Cane Bagasse for All Purposes (Bone dry basis). (Estimate Based on Centrifugal Cane Sugar Production.)

Continent and Country	Bagasse in Short Tons 1950	1951
U. S. and Territories		
Louisiana	750,000	500,000
Florida	125,000	115,000
Hawaii	1,000,000	1,100,000
Puerto Rico	1,300,000	1,400,000
Virgin Islands of the U. S.	7,000	12,000
Total U. S. and Territories	3,182,000	3,127,000
Other North American and Central American Countries		
British Honduras	2,000	3,000
Costa Rica	24,000	24,000
El Salvador	21,000	31,000
Guatemala	29,000	33,000
Honduras	5,000	7,000
Mexico	800,000	850,000
Nicaragua	30,000	32,000
Panama	19,000	22,000
Antigua	21,000	36,000
Barbados	184,000	170,000
Cuba	6,500,000	8,000,000
Dominican Republic	600,000	700,000
Granada	1,000	1,000
Guadeloupe	85,000	95,000
Haiti	65,000	65,000
Jamaica	300,000	315,000
Martinique	60,000	50,000
St. Kitts	50,000	50,000
St. Lucia and St. Vincent	14,000	14,000
Trinidad	160,000	170,000
Sub Total	8,970,000	10,668,000
Total North and Central American Countries, including U. S. and Territories	12,152,000	13,795,000
Asia and Far East		
Burma	5,000	16,000
China (mainland)	400,000	400,000
Formosa	410,000	620,000
French Indo-China	7,000	6,000
India	1,500,000	1,600,000
Indonesia	310,000	480,000
Pakistan	60,000	100,000
Philippines	950,000	1,100,000
Thailand	35,000	35,000
Total Asia	3,677,000	4,357,000
South America		
Argentina	720,000	760,000
Bolivia	3,000	3,000
Brazil	1,800,000	1,900,000
British Guiana	250,000	260,000
Colombia	220,000	250,000
Ecuador	61,000	60,000
Paraguay	26,000	33,000
Peru	525,000	525,000
Surinam	4,000	4,000
Uruguay	8,000	14,000
Venezuela	53,000	55,000
Total South America	3,670,000	3,864,000
Africa		
Belgian Congo	15,000	17,000
British East Africa	90,000	90,000
Egypt	215,000	220,000
Madagascar	15,000	20,000
Madeira Islands & Azores	10,000	10,000
Mauritius	510,000	540,000
Mozambique	105,000	105,000
Angola	60,000	55,000
Reunion	120,000	140,000
Union of South Africa	700,000	550,000
Total Africa	1,840,000	1,747,000
Oceania		
Australia	1,100,000	900,000
Fiji	135,000	130,000
Total Oceania	1,235,000	1,030,000
WORLD TOTAL	22,574,000	24,793,000

countries, great numbers of small operators are involved in production of sugar by open evaporation without any purification. More than six million tons of sugar were produced by these antiquated small scale methods during 1951. Of this, more than three million tons were produced in India. The bagasse from these small scale operations was not counted in the availability figures because it is used by the farmers themselves for many purposes and even if it were not, the collection problem would be insurmountable.

This huge supply of bagasse amounting to 25 million tons appears, on the surface, to be a tremendous source of cheap fibrous raw material for production of pulp and paper. What is more, slightly more than 50% of it is concentrated in North and Central America.

However, considering the total quantity available is somewhat misleading because there is a great demand for most of this material as fuel for the sugar mills. It has been suggested that other fuels should be substituted for bagasse in the sugar mills so that more valuable products could be produced from this high quality material. In many areas, this is absolutely beyond the realm of economic probability. Many sugar mills are located in areas where fuel imports would be extremely expensive and in these areas the fuel value of the bagasse is of vital importance to the sugar mills. Furthermore, any substitution of other fuels for bagasse would involve large investments on the part of the sugar mills not only for replacement of boiler plant equipment, but for handling and storage of the other fuel.

Still another factor against use of bagasse in many of these areas is the fact that the sugar mills are all small and scattered and there would be no good means of concentrating the bagasse in one location. Since pulp mill operations must be year around operations, whereas sugar mill operations are only 3 to 5 months per year, the bagasse must be baled, treated to prevent deterioration, and stored for use as needed. A baling station alone requires a large investment and it would be necessary to have such a baling station at each sugar mill from which bagasse is obtained.

Because of the above facts, as well as other difficulties where only small sugar mill production units are involved, the utilization of sugar cane bagasse for production of pulp and paper is necessarily limited to certain areas. These areas must have large sugar mill production units. This is particularly true if merely surplus bagasse is to be used.

If other fuel is to be substituted for bagasse in the sugar mills, then the area must have acess to low cost fuel supplies such as oil, coal or natural gas. Even when extremely low cost fuel is available, sugar cane bagasse is *not* a *cheap* raw material for the production of pulp and paper. Louisiana probably has the most favorable conditions in this respect of any sugar producing area in the world. In Louisiana natural gas is now selling for $0.17 per 1000 cubic feet, and it requires twelve million cubic feet to replace one ton of dry bagasse as fuel. Thus the fuel replacement value of the bagasse is only slightly more than $2.00 per dry ton. However, it has been estimated by several reliable engineers, including Dr. Arthur G. Keller, Professor of Chemical Engineering at Louisiana State University, that bagasse delivered to the pulp mill would cost $10 to $12 per dry ton. This means that the actual total cost of the bagasse on the dry basis to the pulp mill is some $8 to $10 higher than its mere replacement value as fuel. With these facts in mind, it is not difficult to understand the difficulties which bagasse pulp and paper mills will have in high cost fuel areas. At best it will be difficult for them to compete with mills using Southern Pine wood at $14 per cord, unless they produce a product for which bagasse fiber is especially suited.

Bagasse pulp and paper mills which have been successful thus far have indeed produced end products in which the excellent properties of bagasse fiber can be utilized to greatest advantage. None of these mills look upon bagasse as a cheap substitute raw material, but consider it a valuable raw material in its own right which has special properties of value to the paper industry.

Possibilities for Future Use

As mentioned previously in this report, the development of a successful method of separating pith from bagasse fiber is the key to utilization of the fiber for manufacture of pulp and paper. Once the pith is removed economically the fiber can be converted into a great variety of pulp and paper products with little technical difficulty by standard methods. The successful and profitable commercial production of pulp and paper from bagasse in other countries during the past 15 years

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WET RECOVERY SYSTEM

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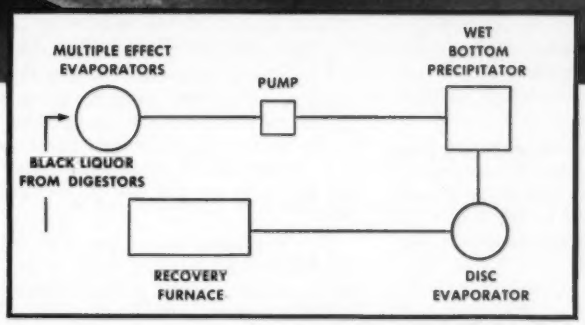
A shortcut in the recovery of chemical compounds from Recovery Furnace Stack Gas offered by Research Corporation, assures an appreciable saving in operating and maintenance cost. That's because the new Wet Recovery System gets the precipitated dust into the black liquor as soon as possible after it has been removed from the gas.

Instead of collecting dust in hoppers at the bottom of the precipitator and conveying it, in the dry state, to black liquor tanks, the new method utilizes a liquor sump or tank directly under and an integral part of the Cottrell Precipitator. Black liquor flows to this wet bottom where the recovered dust is taken up in solution or suspension. In this continuous process, the black liquor discharges to the feed going to the disc evaporators.

The Wet Recovery System does away with handling dust in the dry state. It eliminates steam coils and heat insulation formerly needed to prevent condensation in the hoppers. It obsoletes such expensive equipment as hopper vibrators and steam-jacketed conveyors.



COMMERCIAL installations have proved the economy of this new system. They have demonstrated, too, that dust collection efficiency remains as high with the wet recovery system. For complete data, write for Editorial Reprint P-1.

RESEARCH CORPORATION

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Bound Brook, New Jersey

RC-132

is an indication of its economic feasibility in certain areas.

In work which has been carried out in recent years, almost all of the former objections to the use of bagasse from a technical standpoint have been eliminated. The reasons for failures of previous commercial attempts to utilize bagasse have been overcome.

The structure of the bagasse plant is now well understood, uses have been developed for the pith, a steady supply of the raw material can now be assured in large major producing areas, excellent methods of storage have been worked out, there is an adequate supply of skilled labor to be called upon, and there is a high degree of understanding of the type pulp and paper products which can be produced from the bagasse fiber.

Now that the technical difficulties specific to bagasse have been worked out and a pith-free fiber is available, the tremendous store of knowledge regarding production of pulp and paper from straw can also be drawn upon. The pith-free bagasse fiber is actually superior to straw as a paper making material. The use of various types of straw has been developed to a great extent in many countries of the world. This development has been particularly important in Western Europe where bleached straw pulp has ben able to compete with Scandinavian wood pulp, even when supplies of the latter were adequate.

In view of the above facts, the successful utilization of bagasse fiber for production of a great variety of pulp and paper products is almost entirely dependent upon economic factors and availability of markets. Based on information available, it appears highly probable that conditions existing in Louisiana, Florida, Hawaii, Puerto Rico, Cuba and certain other areas are favorable for successful commercial production of certain grades of pulp and/or paperboard. However, all factors would have to be investigated fully for each area before any venture undertaken.

It should be emphasized here that successful and highly profitable production of pulp and paper from either straw or bagasse in other countries, such as Peru, Argentina, Western Europe, the Philippines, India or Formosa, gives no assurance that such production would be successful in the United States or its territories. Certain conditions exist in some foreign countries, such as low labor costs, high tariffs, import restrictions, and shortage of currency, which make it possible for small, inefficient, backward mills to operate successfully. Such mills could not possibly compete on either quality or price if they were located in the United States, or if they depended upon the United States for markets. In order to be successful in the United States or its territories, a bagasse pulp and paper mill must be able to compete with the most efficient wood pulp and paper producers in both quality and price.

In spite of the difficulties involved, there is no reason whatsoever that large, highly efficient mills cannot be constructed for using bagasse. If this were done, and if the bagasse were used for products in which its properties could be used to advantage, the costs should be competitive in every way with those mills using pulpwood. Construction of any other type mill for this purpose and depending upon bagasse to be a *cheap* raw material would be beckoning failure.

To insure both hig quality and best efficiency, it is believed that European technical know-how on utilization of agricultural residues should be combined with modern United States pulp and paper engineering methods for construction of any bagasse pulp mills.

It is believed that the bagasse fiber can be used to greatest advantage in various grades of paperboard, and for production of bleached pulp for papermaking. Bleached bagasse pulp could be used in varying proportions in almost all grades of paper which require bleached chemical pulp. Although some grades of paper might be made entirely of bleached bagasse pulp, it is believed that its greatest use will be as a blending pulp. Because of its special characteristics it can be used to impart certain desirable properties to some grades of paper which are not possible when using wood pulp alone.

At the present time, the utilization of bleached bagasse pulp seems to have its best market potential in the field of book papers and writing papers. However, it might also be used to excellent advantage in glassine and grease-proof papers, waxing papers, tissues, bleached solid white paperboard, frozen food packages, and other grades of folding boxboard requiring a white cover.

In spite of the great publicity given to the use of bagasse for newsprint, production of this particular product from bagasse seems to be at the bottom of the list so far as economic feasibility is concerned.

NEW EQUIPMENT

(Continued from page 20)

No. 622 is made in three sizes: 12 x 4 x 4; 12 x 3 x 3; 12 x 2 x 2—the first figure being the maximum inside diameter and the other two figures being equivalent inlet and outlet diameters. In the No. 600, the greatest inside diameter is 3" with a ½" inlet and 5/8"outlet, the latter being at the extreme top.

Write for Bulletin P-4.

Consistency Regulator with Pneumatic Recording Control

Bird Machine Co., South Walpole, Mass. announces that its Consistency Regulator is now available with pneumatic control and air-operated dilution valve—optional equipment to the mechanical—type impulse transferrer and regulating device now in wide use.

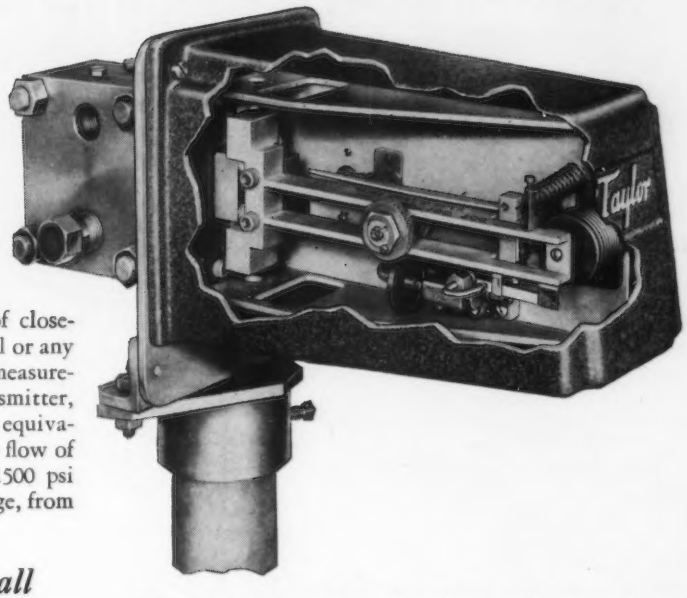
The Regulator operates as follows. Stock flows through the stainless steel indicator box, passing into a channel under a balanced copper float. Stock of lower consistency runs faster than that of higher consistency. The level falls or rises accordingly, and the movement of the float is picked up by a Foxboro Position Transmitter (the small black box shown at the left and above the indicator box) which transmits it to a Stabilog Controller. The controller operates the dilution valve.

The Recording Controller may be located at any point convenient for the operator and does not have to be close to the indicator. A two-pen chart record shows the regulated consistency and the valve opening for the incoming stock.

The Regulator maintains stock consistency within a rated plus or minus 0.1% of the desired point. It may be employed after centrifugal or plunger pumps, ahead of the paper machine, at knotters and pulp screens, at pulp thickeners before bleaching, at pulp drying machines, ahead of brown stock washers—wherever accurate, dependable control of consistency is desired.

Taylor announces SIMPLIFIED FLOW MEASUREMENT

—with the NEW Taylor TRANSAIRE® Differential Pressure Transmitter!



HERE'S Taylor's answer to the problem of close-coupled fluid flow measurement, liquid level or any other installation requiring differential pressure measurement and transmission. It is a force-balance transmitter, designed to convert differential pressure into an equivalent 3 to 15 psi output. It can be used to measure flow of liquid, steam or gas. This Transmitter has a 1500 psi pressure rating and is available in any desired range, from 20″ to 800″ of water.

Inexpensive and Simple to Install

1. Simplified piping because it can be close-coupled to orifice flanges.
2. No Leveling—mercuryless dry meter.
3. Side, top or bottom bracket mounting available with 2″ pipe stand.
4. No seal pots required—Negligible displacement because of force balance construction.
5. Light weight for easy handling; weighs only 23 lbs.
6. Vent screws for simple, solid filling.

Economical—Easy to Maintain

7. Self draining or venting—no periodic manual venting or draining.
8. Mercuryless—flexible but tough Teflon coated glass fabric diaphragm.
9. Over-range to full body rating with no permanent damage.
10. Purges, if required, can be installed to keep body swept clean.
11. Simple range change by sliding pivot—screw driver trim.

Accurate

12. Relay valve for linearity, minimum hysteresis, fast speed of response.
13. Pressure effect 0.02% / 100 psi.
14. Temperature effect 1.0% / 100°F.
15. Self draining and venting. No errors build up during operation.
16. Damped pneumatic circuit—stable air output even on vibrating pipe lines.

Rugged and Dependable

17. Body forged steel or type 430 Stainless Steel. Working pressure rating, 1500 psi.
18. Weather-proof housing built for tough service and outdoor mounting.
19. Force balance construction—negligible motion—minimum possible wear.
20. Process sealing bellows 3-ply type 316 stainless steel.

Adaptable

21. 100% suppression—continuously adjustable from 0 to 100%. Ideal for liquid level applications.
22. Ten-to-one rangeability in each of 2 forms:
    a. 20-200″ water, b. 80-800″ water.

Find out more about this new concept of flow measurement control. Ask your Taylor Field Engineer, or write Taylor Instrument Companies, Rochester 1, N. Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

Humidifying Unit

In announcing Type E Unit Humidifier, the manufacturer, Bahnson Co., Winston-Salem, N. C., states that it has special use in the manufacture and converting of paper. Designed for use in all types of industrial and commercial spaces which require automatically controlled humidification, units may be used for complete humidification systems, for spot conditioning in large spaces, for boosting the capacity of existing systems, and for precise humidity control in laboratories.

The self-contained units are installed by suspending from ceiling, then connecting water supply and electricity. Water is atomized by centrifugal force and distributed horizontally through a 360° opening. Any portion of the discharge opening may be blocked off for directional distribution. Units evaporate up to 3 g.p.h. and may be installed singly or in groups with automatic control. Each unit will humidify several thousand cubic feet of room volume at normal conditions, it is claimed.

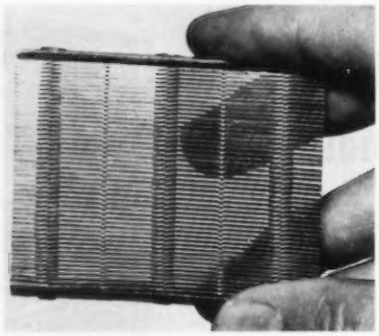
Construction except for heavy duty fractional-horsepower motors, is of non-corrosive metals with silver-grey hammerloid finish. Units measure 15½" high by 18¼" diameter, and weigh 55 pounds.

Wedge-Slot Screens

A Wedge-Slot Screen for processing fine materials is announced by Hendrick Manufacturing Co., Carbondale, Pa.

It is made with unusually small stainless steel bars that have a V-shape profile held to be particularly effective for dewatering, drying, filtering, heavy media recovery, wet screening and centrifuging. Bars are of two types: Type 10A for openings ranging from 0.004" to 0.04"; Type 15A for openings from 0.012" to 0.06".

Slot spacings are uniform even with the smallest opening of 0.004", it is said. To prevent distortion of slot width in screening irregularly-shaped material or from vibrating screen action, the spacing between rivets is only 1", instead of the 2¾" spacing commonly used. An additional safeguard against mesh distortion during use is provided by special spacing lugs between the profile bars, which lock the mesh.



Both Type 10A and Type 15A can be provided with tension clasps for either side or end tension, interchangeable with any other tensioned screen type, for any make of vibrator. Installations can also be made without tension clasps for shakers, vibrators, and stationary equipment, by bolting, clamping between rubber strips, or clamping over bucker-up bars of vibrating equipment.

Correction

In the article on Michigan Carton Co. in the issue of September 19, the layboy referred to as the "Maxim type" was designed and built by the Maxson Automatic Machinery Co. and should have been called a "Maxson Layboy."

U. of Calif. Gives Short Course on Corrosion

A five-day short course in corrosion will be held February 2-6, 1953, at the University of California, Berkeley. The course is given by the university's extension department and the departments of mechanical engineering, mineral technology and chemical engineering in cooperation with the National Assn. of Corrosion Engineers.

Speakers from industrial and governmental laboratories and academic institutions will cover basic corrosion science theory and application of corrosion mitigation measures. Discussions will cover construction materials, coatings, environment, cathodic protection, corrosion testing and evaluation, equipment design, high temperature oxidation and the roll of the corrosion engineer in industry.

NYU Course in Pulp and Paper

Mondays, 6:15-8:00 P. M.
September 22, 1952-January 19, 1953

At the University's Washington Square Center, N.Y.C.

A basic survey of the industry, this set of fifteen lectures seeks to provide those in the paper and graphic arts industries with a broad knowledge of the field. Particular emphasis is placed on correlating end use of the product with properties produced in manufacture. Discussion will follow each lecture. Frequent use will be made of films and other visual aids.

Course Moderator: L. B. Schlosser, Schlosser Paper Corp.

Oct. 20—Stock in the Beater; Coloring, Sizing, Fillers.
C. G. Landes, American Cyanamid Co., Inc.

Oct. 27—Make or Break—The Paper Machine.

Nov. 3—Rag-Content and High Alpha Papers.
P. P. Gooding, Strathmore Paper Co.

Nov. 10—The Coating Process.
W. R. Maull, The Mead Corp.

Nov. 17—Finishing—From Machine to User.

Nov. 24—Paperboard Production and Conversion.
J. D. Malcolmson, Robert Gair Co.

Dec. 1—Envelopes and Paper Conversion.
J. A. Chadbourne, Old Colony Envelope Co.

Dec. 8—Paper Properties and Testing.
L. S. Reid, Metropolitan Life Insurance Co.

Dec. 15—Printing I—Letterpress and the Ink-Paper Relationship.
G. Larocque, New York Daily News Syndicate

Jan. 5—Printing II — How will it Print by Offset?
A. P. Reynolds, S. D. Warren Co.

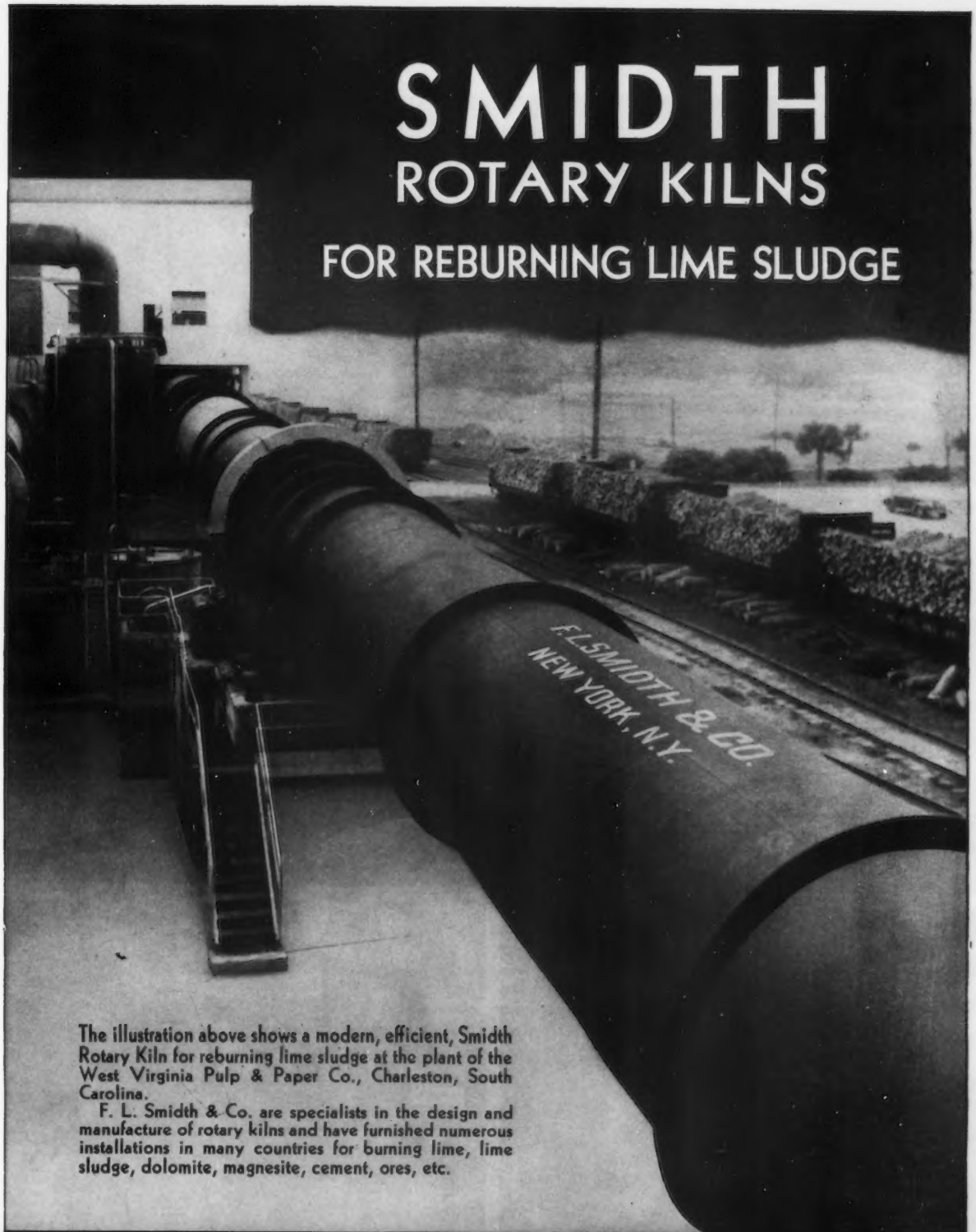
Jan. 12—Paper in use: Grades and their Function.

Jan. 19—New Directions and Review.
L. B. Schlosser

Organize Pacific Paper Products

Pacific Paper Products, Inc., 252 Canal street, Lawrence, Mass., has filed Articles of Organization at the Office of the Secretary of the Commonwealth of Massachusetts, as a general dealer in all types of merchandise. Capital stock consists of 1,000 common shares having no par value. Louis P. Lipman, 53 Athelstane road, Newton, Mass., is president; Samuel Goldstein, 11 Custer street, treasurer; and Max Goldstein, 26 Logan street, clerk—both of Lawrence.

SMIDTH
ROTARY KILNS
FOR REBURNING LIME SLUDGE



The illustration above shows a modern, efficient, Smidth Rotary Kiln for reburning lime sludge at the plant of the West Virginia Pulp & Paper Co., Charleston, South Carolina.

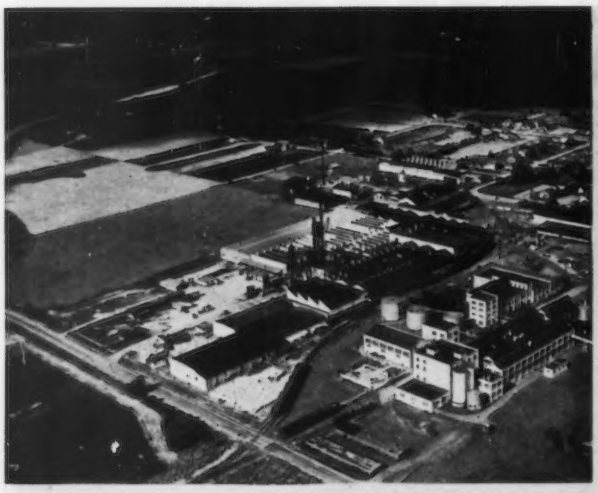
F. L. Smidth & Co. are specialists in the design and manufacture of rotary kilns and have furnished numerous installations in many countries for burning lime, lime sludge, dolomite, magnesite, cement, ores, etc.

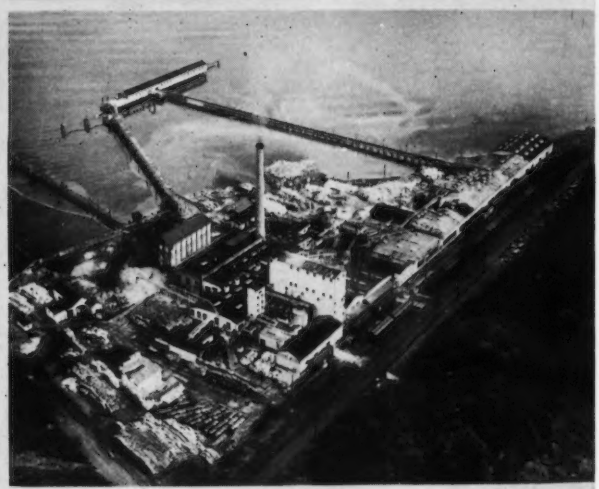
F. L. SMIDTH & CO.

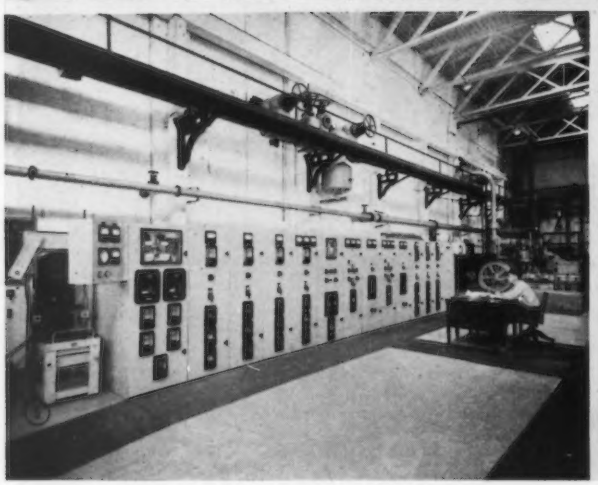
11 WEST 42nd STREET • NEW YORK, N. Y.

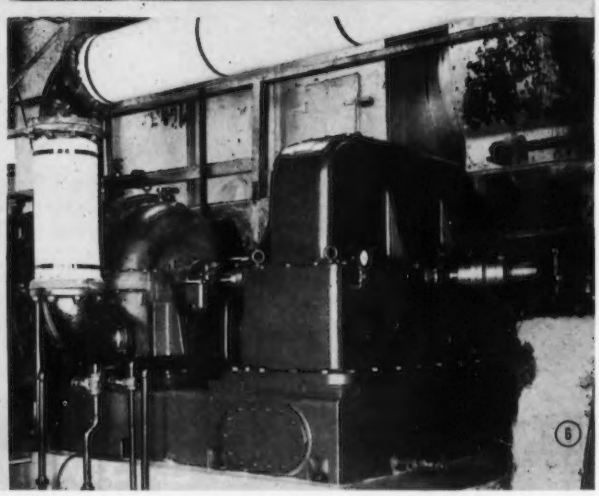
LONDON · PARIS · COPENHAGEN · CANADA · BOMBAY

Improvements at Fibreboard Products

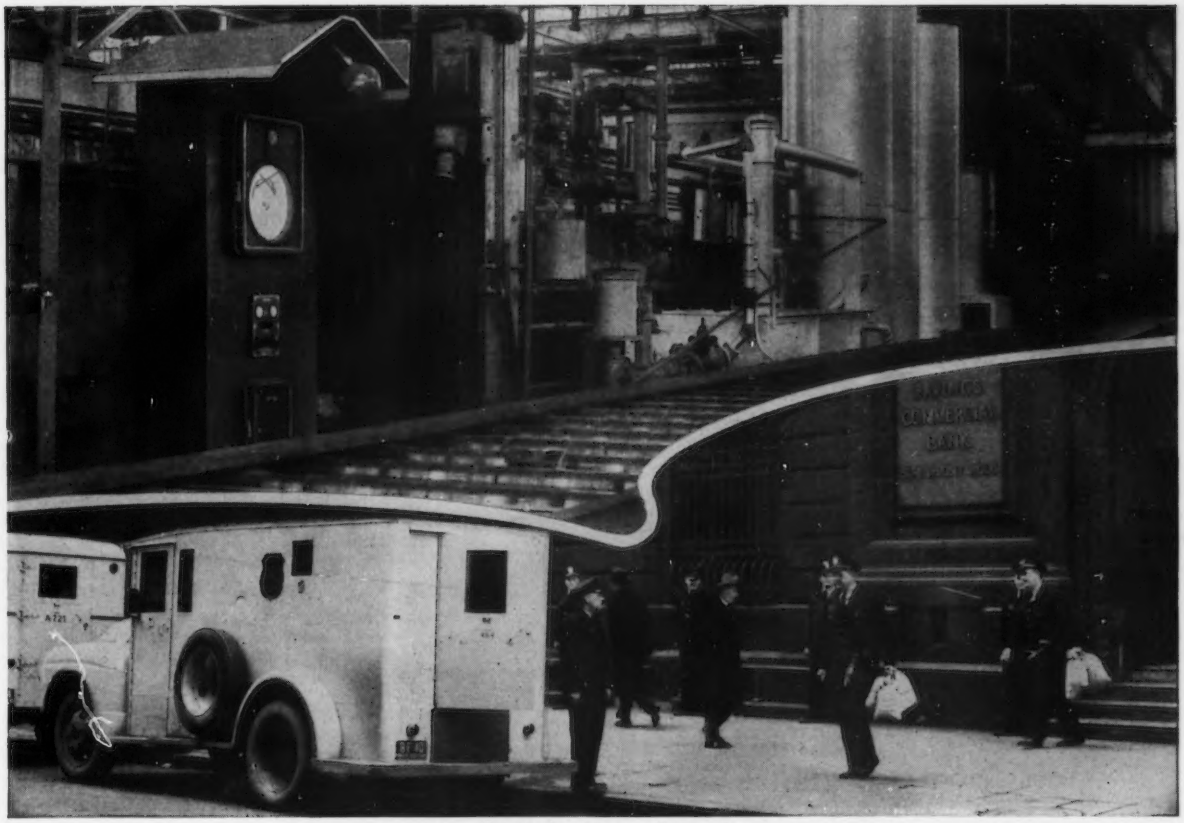








SUMNER DIVISION—Figure 1—Aerial View. Figure 2—Offbearing end of 85' Langston Corrugator showing Langston type take-off. Figure 3—Single Face End of Corrugator showing "A" Flute and "B" Flute Single Facers. PORT ANGELES DIVISION—Figure 4—Aerial View. Figure 5—Power Plant showing Westinghouse Main Switch Panel Board. Figure 6—General Electric mechanical driven Steam Turbine designed for steam conditions of 150 psi, with 75 psi back pressure.



Modern Safeguards—Brink's for Money, Bailey for Process Materials

Are Your Process Materials Guarded As Well?

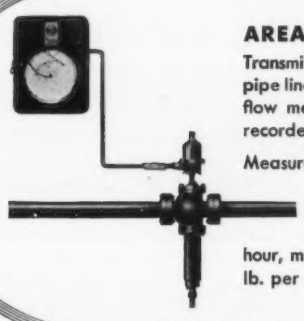
HERE'S HOW TO PREVENT SPOILAGE AND WASTE...

TO avoid waste of valuable process materials and finished products, process rates and conditions must be accurately measured and controlled. That's where Bailey Meters, Analyzers and Controllers can help you to improve the efficiency of your plant.

Take flow for instance. Bailey Meter Company offers a complete line of flow measuring and controlling equipment for applications ranging all the way from high pressure steam to low pressure gas. We measure flow in pipes, open channels, ducts, furnaces, smelters, kilns, ovens, dryers.

When you call Bailey Meter Company, you get the help of years of experience as well as recommendations from a wide selection of measuring and controlling devices.

Your local Bailey Engineer is as near as your telephone. He has the experience and the equipment necessary to set up an effective guard for your process materials. P-26



AREA TYPE FLOW METER

Transmitter goes into 1, 2 or 4 inch pipe line like a valve and transmits flow measurements electrically to recorder in remote location.

Measures oil and other clear liquids under static pressures up to 600 psi. Minimum range 0 to 1200 lb. per hour, maximum range 0 to 9600 lb. per hour.

BAILEY METER COMPANY

1056 IVANHOE ROAD
CLEVELAND 10, OHIO

Process Controls
TEMPERATURE · FLOW
PRESSURE · LEVEL
GAS ANALYSIS · RATIO

Improvements at Fibreboard

An impressive list of projects have been carried out at the Port Angeles and Sumner, Wash., plants of Fibreboard Products, Inc., as part of a long-range program of plant improvement and modernization.

Heading the list of improvements at the Sumner mill is the new steel, concrete and iron-sided converting plant of 34,500 square feet which was built to house additional corrugating equipment, including stitching, taping, slotting and printing machinery. Fibreboard production executives estimate that this will eventually increase output approximately 300 percent.

In addition to the new equipment, 100 percent modernization of the mill stock refining equipment has also been accomplished at the Sumner mill. This includes the installation of a 10-foot-diameter Shartle Batch Hydra-Pulper, an Emerson Jr. No. 3 Refiner, and an Emerson Magnetic Separator. In addition, a new Emerson Jr. Refiner was installed on the liner system, eliminating the necessity for batch feeders and resulting in more effective stock preparation, as well as increased production and better product quality.

Equipment installed in the new converting plant includes an 85" Langston Corrugator with A-B flute single facers, and a double cut-off having a continuous running feature which materially increases production by saving time on sheet size and order changes.

Another feature of the new Sumner installations, and one of the most unique and modern to be found in any paperboard mill, is the improvement in the corrugating and printer-slotter trim handling. This is accomplished through the use of conveyors and blowers, which return the waste trim directly to the board mill pulping system.

The increased power load requirements are provided by a new steam boiler and other suitable additions to the power plant.

At the Port Angeles plant additional stock preparation equipment and modernization consists of a Downingtown hydra-pulper and a Morden stock refiner. This equipment materially adds to the versatility of the products that can be produced, since it is able to utilize waste grades of paper formerly difficult to handle. It also enhances stock refining and stock preparation capacity and efficiency.

The Number 1 paperboard machine has been completely modernized by installation of a Downingtown suction drum roll, one additional Black-Clawson vat, G-E turbine drive, new Black-Clawson drive-in stands (one of which is equipped with reversible gear), 18 new 42"-diameter, 150-pound Downingtown pressure driers, plus Midwest-Fulton drier steam control system and a J. O. Ross hot-air system. In addition, a protective hood will be added to the board machine.

The effect of these installations will be to increase output by 3,600 tons per year, together with a substantial increase in quality and in the number of types of grades that can be produced.

Letters to Editor

September 25, 1952

Paper Trade Journal
15 West 47th Street
New York 36, N. Y.

Dear Sirs:

I read your publication *Paper Trade Journal* with great interest and as a papermaker it gives me new stimulation and ideas each time.

As I see from your journal, the way the American paper industry works is modern and efficient. Therefore, I feel it would be for me of great advantage if I could find the possibility of working in the paper industry of the United States for one year or longer.

Now I would like to ask you if it might be possible to find a position through you which would give me an opportunity to observe different phases of the paper industry in America, in order to get acquainted with your methods.

For your information, I am 25 years of age. I have worked as apprentice in the paper and pulp industry for two years. At the end of this time I entered the O. v. Miller Polytechnic Institute in München. At the end of this course I was placed as technical assistant to the business administrator of a well known paper mill making fine papers, in Western Germany near Cologne. My knowledge of English is limited, but I am confident that with study I will be able to do the work required of me and will be able to learn much. Through the Church of Christ Mission in Frankfurt I could send character references.

I would appreciate your help very much. If you can't help me directly perhaps you can tell me whom to write.

Thanking you sincerely, I am,

KARL-HEINZ GOEBEL
Niederau über Düren/Rhld.
Schoellershammer 4
Germany

September 14, 1952

Lockwood Trade Journal Co.
15 W. 47th St.
New York 36, N. Y.

Sirs:

Re: Change of the Company Name.

As subscribers and readers of your esteemed *Paper Trade Journal,* we take this opportunity to inform you of changing our company name, which occurred as of last June 1. The new name runs as follows:

OJI PAPER COMPANY, LTD.

In 1949, during the period of occupation by the Allied Forces, the old concern "Oji Paper Mfg. Co., Ltd.," was directed to be reorganized by the order of the so-called SCAP, and as the consequence thereof, it was divided into three companies, each starting its business as of August 1 in that year. Our company then assumed the name "Tomakomai Seishi K.K.," as you at present call us. However, it has recently been decided that the familiar and well-recognized old name "Oji" should be reserved or rather be revived, so our company, as elder brother of the three in some sense, succeeded the old name as above described, with somewhat modification, of course, for the parent company now under process of liquidation, still exists in viewpoint of Law of Commerce.

Such being the case, please use our new name when you send your esteemed magazine to us hereafter.

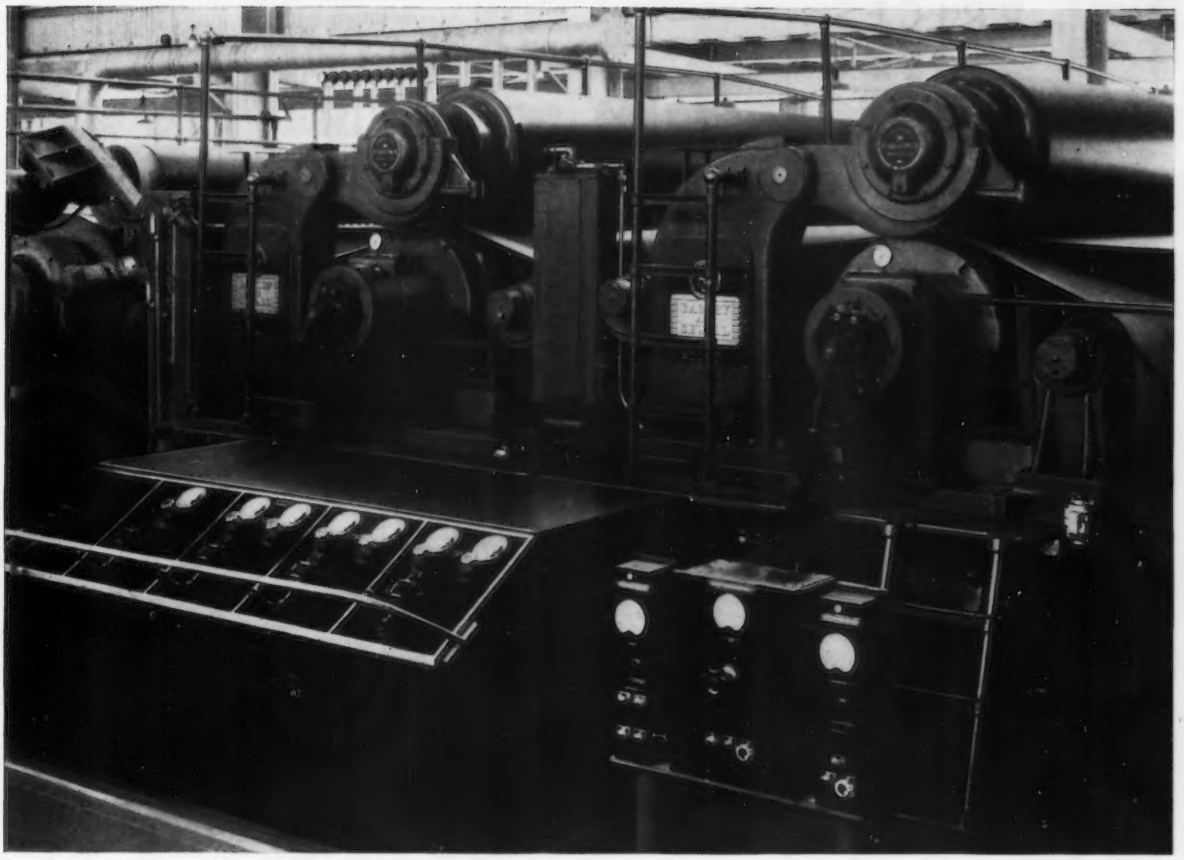
Yours very truly,

MITSURU MATSUI,
Staff Member,
Investigation Dept.,
Oji Paper Co. Ltd.,
3 Ginza 4-chome,
Chuo-Ku, Tokyo, Japan.

Fighting Paper Wanted

Invitations for bids have been issued by the New York Quartermaster Procurement Agency, 111 E. 16th Street, New York 3, N. Y., on QM-30-280-53-326, covering Paper, bristol, index, chemical wood, 1,555,500 sheets. Bids will be opened October 21, 1952, at 11:00 a.m. (EST) at the New York office. This procurement is for the U. S. Navy.

- QM-30-280-53-328, covering Tape, paper, gummed, kraft, 5,000 rolls; and Tape, paper, gummed, water resistant, 19,730 rolls. Bids will be opened November 12, 1952, at 1:00 p.m. (EST) at the New York office. This procurement is for the U. S. Navy.
- QM-30-280-53-331 covering Envelope-Wallet, Chemical Wood, Flaps and Tying Closure, One Pocket, 332,500 ea. Bids will be opened October 28, 1952 at 2:00 p.m. (EST) at the New York Office. This procurement is for the U. S. Air Force.



A MODERN PRESS SECTION . . . *for efficient press action*

Maximum protection is provided in placing all moving parts and controls within press housings and frames and results in a cleaner design appearance. All actuating controls are conveniently grouped at a control console.

Hydraulic operation and control is a keynote to its top performance and efficiency—raising, lowering, floating and independently pressure loading both front and rear cylinders—increasing or decreasing nip pressures with additional controls to relieve pressure instantaneously on the entrance of any foreign object into the nip to prevent damage to clothing and rolls.

The hydraulic system provides a vibration dampener that results in a steadier press roll action—assures a more uniform sheet—increases life of rolls and felts. Maintenance costs and down time are at minimum with this new press design.

Our engineering staff would welcome the opportunity to show application of the modern paper machine designs to your mill requirements.

designers and builders of paper making machinery since 1853

BAGLEY B&S SEWALL

Foreign Representative
Castle and Overton, Inc.
630 Fifth Ave., New York 20, N.Y.

WATERTOWN NEW YORK

Finland Representative
Aktiebolaget Ekstroms Maskinaffar
Helsingfors, Finland

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton	$116.00/$126.00
Sheets	138.00/ 147.50

Kraft—per cwt. 50# base wgt. OPS Ceiling CPR 88

F.o.b. Southern & Western integrated mills. C.l. Freight allowed up to $10 a ton.

Standard Wrapping, ctr. rolls	$7.75/ —
Butchers, counter rolls	8.25/ —
Standard Bag, mill rolls	7.50/ —
Shipping Sack, mill rolls	7.75/ —
Gumming, mill rolls	8.00/ —
Asphalting, mill rolls	7.75/ —
Envelope, Sub. 20, mill rolls	9.25/ —

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs.

Wh. No. 1 Frd.	$1.85/$1.90
Wh. No. 1 MG	1.85/ 1.90
Wh. No. 1½	1.50/ 1.65
Wh. No. 2	1.35/ 1.45
Kraft Anti-Tar 20-30	1.75/ 1.80
White Anti-Tar 20-30	2.20/ —

Toilet—per case of 100 rolls—1M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5, 650 sheets	6.65/ —
Bleached 4½x4½	10.00/12.50
Bleached 4½x5	9.81/10.14
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$9.75
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x4½, 2 ply	$8.95/10.37
4½x5, 2 ply	10.25/10.75

Paper Towels—per case of 3750

Wh. Jr. M'tif'd 9⅛x9½	$6.40
Br. Sr. M'tif'd 9⅛x12	4.40
Br. Jr. M'tif'd 9½x9⅛	3.90
Br. Jr. Sgl. fold 9⅛x10¾	3.95
C-Fold 10⅛ min. x 14 max.	5.90/ 6.64
Blchd. 7½x11, 48/50 rolls	6.80/ 7.92

Manila, per cwt.

No. 1 Jute Tag, 100-lb., sheets	$19.55/21.55
Reg. Jute M.F. 40-lb., sheets	18.50/20.50
Printing Manila	12.00/ —

Gummed Tape—per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$6.90/ —
60-lb. 600 ft. GSI	6.90/ —
35-lb. 800 ft. GSI	7.95/ —
35-lb. 500 ft. GSO	6.00/ —

MARKET WOOD PULP

Fourth Quarter Contract Prices, Per Short Air-Dry Ton

Delivered Basis — Varying Freight Allowances

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ —	‡$60.00/ 85.00	$70.00/ —		$75.00/ — §
Sulfate, Bleached	140.00/147.50	145.00/155.00	140.00/142.50§		
Semi-bleached Sulfate	140.00/ — *		135.00/ —		
Sulfate, Unbl.	100.00/ —	100.00/125.00	$100.00/105.00§	$105.00/135.00	100.00/ — §
Sulfite, Blchd.	140.00/ —	140.00/145.00	140.00/ —	140.00/ —	140.00/145.00
Sulfite, Unblchd.	125.00/132.50	135.00/ —	115.00/ — §	120.00/125.00	115.00/ — §
Sulfite, Unbl'd (Glassine)	132.50/ —	139.00/ —	119.00/ — §		
Soda, Blchd.	140.00/ — *				
Sulfite Screenings	72.50/ — *				
Sulfate, Screenings	67.50/ — *			Delivered Basis	
Groundwood Screenings	60.00/ — *				
Unblchd. Sulfate Sideruns	132.50/ — *				
Stand. News, Sideruns	92.50/ — *				

* OPS Ceiling, CPR 49. ‡ F.o.b. Shipping Point. § On Dock Atlantic Ports.

Boards Deld., per ton (10 tons or over)

Filled News	$90.00/ —
Plain Chip	90.00/ —
Blchd. Mla. L-d. Chip	140.00/142.50
White Pat. coated .020	160.00/162.50
Kr. Liner 42 lb. M sq. ft. $2.47	117.50/ —
Kr. Corr. .009 M sq. ft. $1.59	122.50/ —
Binders Boards	133.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4-Ctns. per cwt.
100% Rag. Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Ctns. per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns. per cwt.
Watermarked	$19.00/$20.50
Plain	18.40/ 19.50

Ledgers	4 Ctns. per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case per cwt.
No. 1	$23.90/$24.65
No. 2	22.40/ 22.85
Machine Coated	
Extra No. 1	$21.35/$21.65
No. 1	19.15/ 19.65
No. 2	16.65/ 17.40
Uncoated	
No. 1 Antique (Watermarked)	$19.15/$19.65
Offset	18.15/ 19.15
A Grade E. F.	18.40/ 18.65
A Grade S. C.	18.90/ 19.15
B Grade E. F.	17.40/ 18.15
B Grade S. C.	17.90/ 18.65

‡ Indicates a price change.

WASTE PAPER MARKET

Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. See TRENDS.

	New York Oct. 11	Philadelphia Oct. 7	Boston Oct. 4	Chicago Oct. 1
No. 1 Mixed Paper	$7.00/ 10.00	$7.00/ 10.00	$7.00/ —	$10.00/ —
No. 1 News	12.00/ 13.00	11.00/ 12.00	15.00/ —	15.00/ —
Over-issue News	20.00/ 22.00	20.00/ 21.00	12.00/ 14.00	18.00/ —
Mill Wrappers	7.00/ 8.00	10.00/ 12.00	13.00/ 19.00	13.00/ —
Corrugated Containers	17.00/ 18.00	12.00/ 14.00	18.00/ 19.00	20.00/ —
Double Kraft Ld. Corr. Cuts	35.00/ 45.00	30.00/ 37.50	25.00/ 40.00	35.00/ 40.00
100% Kraft Corr. Cuts	45.00/ 55.00	40.00/ 55.00	35.00/ 45.00	55.00/ —
Used Sugar & Flour Bags	35.00/ 45.00	27.50/ 37.50	25.00/ 35.00	30.00/ —
Super Resorted Br. Kraft	45.00/ 50.00	25.00/ 32.50	20.00/ 35.00	30.00/ —
New Br. Kraft Env. Cuts	70.00/ 80.00	70.00/ 75.00	55.00/ 65.00	60.00/ —
New Br. Kraft Cuts	60.00/ 70.00	60.00/ 65.00	45.00/ 55.00	55.00/ —
No. 1 Gdwd. Shvs.	20.00/ 30.00	20.00/ 25.00	28.00/ 30.00	25.00/ —
White Newsblanks	65.00/ 75.00	65.00/ 70.00	40.00/ 50.00	50.00/ —
No. 1 Flyleaf Shvs.	40.00/ 50.00	25.00/ 35.00	25.00/ 42.50	30.00/ —
No. 1 Soft Wht. Shvs.	75.00/ 85.00	60.00/ 70.00	75.00/ 85.00	75.00/ —
Super Soft Wht. Shvs.	85.00/ 95.00	65.00/ 75.00	95.00/100.00	85.00/ —
Hd. Wht. Shvs.	95.00/100.00	85.00/105.00	85.00/100.00	90.00/ —
Hd. Wht. Env. Cuts	115.00/125.00	110.00/120.00	105.00/120.00	100.00/ —
New Manila Env. Cuts	65.00/ 72.00	65.00/ 85.00	60.00/ 70.00	40.00/ —
Col. Tab. Cards	55.00/ 65.00	45.00/ 50.00	40.00/ 50.00	50.00/ —
Manila Tab. Cards	70.00/ 85.00	70.00/ 85.00	60.00/ 65.00	65.00/ —
No. 1 Mixed Ledger	40.00/ 50.00	40.00/ 45.00	35.00/ 45.00	50.00/ —
White Ledger	57.50/ 62.50	57.00/ 65.00	55.00/ 60.00	65.00/ —
No. 1 Book & Mag.†	16.00/ 18.00	16.00/ 18.00	18.00/ 28.00	15.00/ —
No. 1 Rep'd. Hvy. Books‡	26.00/ 35.00	20.00/ 25.00	30.00/ 37.50	27.50/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood. § Deld.

RAG MARKET

New Domestic Cotton Cuttings
OPS Ceiling Price, CPR 28 *
Delivered Mill Basis

No. 1 White Shirts	$15.50/$21.00*
No. 1 Unblchd. Muslins	17.50/ 21.00*
Blchd. & Unblchd. Underwears	16.50/ 21.00*
Blchd. Canton Flannels	15.50/ 21.00*
No. 1 Light Silesias	13.25/ 16.00*
No. 1 Light Prints	8.75/ 11.50*
No. 1 Blue Overalls	11.75/ 14.50*
Suntan Khakis	9.00/ 11.50*
Fancy Shirts	7.75/ 10.00*
Indigo Blues	7.50/ 10.00*
Mixed Khakis	6.00/ 8.00*
Corduroys	7.00/ 8.00*
Cottonades	6.75/ 8.00*
No. 1 Washables	5.25/ 6.50*

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.50/$4.50
Cotton Pants & Overalls	3.00/ 4.00
Thirds and Blues, Repacked	2.50/ 3.00
No. 1 Roofing Rags	1.30/ 1.40
No. 2 Roofing Rags	.90/ 1.00

Bagging
(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.00/$5.25
Heavy Wool Tares	5.00/ 5.50
Foreign Scrap Burlap	4.50/ 4.75
Austr. Wool Pouches	6.00/ 7.00
Domestic Manila Rope	7.00/ 7.50
No. 1 Sisal Strings	6.50/ 7.50

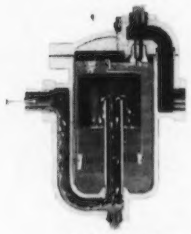
COTTON LINTERS

Memphis Market
F.o.b. Oilmills

	Oct. 9 cents per lb.
Grade 2	13.25/ 12.00
3 1st cut	11.50/ 10.00
4	9.00/ 6.50
5	6.00/ 4.25
6 2nd cut	4.00/ 3.50
7	3.50/ 3.50

ARMSTRONG PRODUCTS FOR BETTER PAPER MILL PERFORMANCE

SPECIAL TRAPS FOR DRYER DRAINAGE



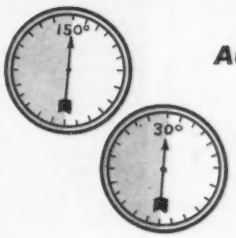
Better Performance, Low First Cost, Low Maintenance.

USE of an individual Armstrong trap on each paper machine dryer insures quick removal of condensate, air and incondensible gases at any pressure, provides higher operating temperatures. The cost is far less than for more elaborate systems and the special new Armstrong paper machine trap gives you long life with low maintenance. Quality is guaranteed.

BULLETIN NO. 205 ▶

. . . explains why you can depend on Armstrong paper machine trap performance. Send for a copy.

INDIVIDUAL DRYER TEMPERATURE CONTROL FOR PAPER MACHINES



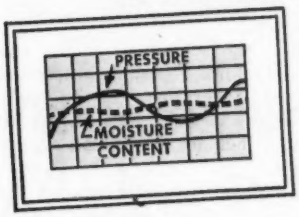
Automatically maintains dryer temperature at any point from 100°F to 250°F

THIS control mixes air with steam to maintain relatively cool wet end dryers. This prevents the sheet from sticking to the dryer surface and avoids curl or cockle due to overdrying on one side. The rest of the machine operates at maximum temperature.

BULLETIN NO. 187 ▶

. . . explains the Control and its advantages. Write for a free copy.

MOISTURE CONTROL SYSTEM FOR PAPER MACHINES



Automatically maintains very uniform sheet moisture content at any desired percent

THIS control maintains much more accurate sheet moisture content than is possible with hand control or constant steam pressure. It detects moisture content changes as the sheet passes over an "indicating dryer" and then varies steam pressure on the entire machine to compensate for the moisture variation.

BULLETIN NO. 196 ▶

. . . tells how the Moisture Control works, explains the specially designed components, lists the advantages. Send for your copy.

STEAM HUMIDIFIERS FOR PAPER STORAGE

Automatically adds moisture to maintain any desired relative humidity

ARMSTRONG Steam Humidifiers prevent the headaches caused by moisture loss from paper in storage; eliminate printing and converting problems. They connect into existing steam systems in much the same way as unit heaters, are economical, accurate, quiet, dripless. A size and type for every requirement.

BULLETIN NO. 1772 ▶

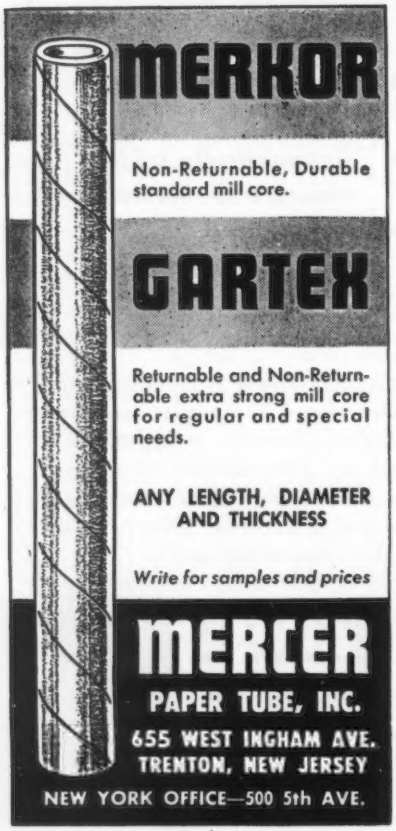
. . . discusses relative humidity, gives data and prices on Armstrong Humidifiers, explains hookups, selection, etc. Send for your copy.

ARMSTRONG MACHINE WORKS

PULP
PAPER

NORDICUS
INCORPORATED
500 FIFTH AVENUE
NEW YORK 36, N. Y.

SELLING
AGENTS


MERKOR
Non-Returnable, Durable standard mill core.
GARTEX
Returnable and Non-Returnable extra strong mill core for regular and special needs.
ANY LENGTH, DIAMETER AND THICKNESS
Write for samples and prices
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PAPER TUBE, INC.
655 WEST INGHAM AVE.
TRENTON, NEW JERSEY
NEW YORK OFFICE—500 5th AVE.

PRICES OF MATERIALS

Aluminum sulfate:		
coml. bags, wks.....cwt.	1.65	
iron-free, c.l.	3.25	
Alcohol, ethyl:		
tax free, dms. c.l.....gal.	1.01	/ 1.05½
deld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms.		
c.l. tt. alld.....gal.	.44	
Casein, acid prec.:		
dom. sh. pt. c.l. .....lb.	.28	/ .38
imp. ex. dock .....lb.	.21	/ .25
Caustic soda:		
c.l. wks. solid, 76% cwt.....	3.35	
flak. & grd. 100-lb. drums...	3.75	
liquid 50% tanks....	2.55	
liquid 70% tanks....	2.65	
China clay:		
dom. air-float, c.l. wks.....ton	10.00	
water-washed, lump. filler....	11.00	
coating	17.60	/30.50
imported, ex. whse...short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works...cwt.	2.70	
multi-unit .....cwt.	3.20	/ 4.40
Formaldehyde:		
USP, inh. dms, c.l. wks....lb.	.0625/	.0675
l.c.l., E. wks.....	.0675/	.0725
Fuel oil:		
Bunker C, No. 6 hvy. tanks,		
N.Y. harbor .....bbl.	2.10	/ —
light, tanks, refinery .....bbl.	2.00	/ 2.25
Hydrogen peroxide:		
USP, 35% cbys. E. of Miss. lb.	.23½/	.26½
Lime:		
hydrated, bags, wks. ....tons	13.50	
Rosin:		
B gum, drms, c.l. Savan..cwt.	7.00	/ —
K, M, N .....cwt.	7.30	/ 7.36
FF, wood, do. .....cwt.	4.10	/ 6.50
Rosin size:		
70%, gum & pale grds, tank		
cars, south, sh. pt.....cwt.	6.25	/ 6.30
Salt cake:		
dom. bulk, c.l. wks.....ton	17.00	
wks. frt. all.....ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks.....	1.50	
bulk ....cwt.	1.20	
Sodium silicate, 40°:		
turbid. c.l. wks.....cwt.	1.30	/
l.c.l. wks.	1.60	/ 1.85
Sodium peroxide:		
dms. c.l. E. of Miss.....lb.	.21	
l.c.l. do. .....lb.	.21½/	.22
Soybean, protein:		
chem. isol, wks, c.l., bags..lb.	.23½/	.24¼
Sulfuric acid:		
60° Be. cbys. c.l. wks.....cwt.	1.75	/ —
l.c.l. wks. .....cwt.	2.05	/ 2.85
Sulfur:		
crude, c.l. mines, contract,		
long ton	21.00	/22.00
f.o.b. vessels Gulf	22.50	/23.50
Sulfur dioxide:		
liquid, coml. cyl. wks.....lb.	.09	
multi-unit cars .....lb.	.0535	
Starches:		
pearl corn, bags, c.l. wks...cwt.	6.59	/ —
white dextrines, c.l. wks...cwt.	7.97	/ —
potato, Idaho, c.l. wks....cwt.	8.50	/ —
potato, Maine, f.o.b. wks...cwt.	10.50	/11.00
potato, imported O.D. ...bags	8.60	/ 8.90
Talc:		
domestic, sacks, c.l. wks...ton	25.00	/30.00
Titanium dioxide:		
anastase, c.l. deld., bags...lb.	.21	/ .21½
l.c.l. deld. .....lb.	.22	/ .22½
rutile, c.l. deld. .....lb.	.23	/ .23½
l.c.l. deld. .....lb.	.24	/ .24½

Pulp, Paper Workers Forego Pay Increase

TORONTO, Ont. — The unusual in wage negotiations was reached by the AFL-TLC Lumber and Sawmill Workers' Union and 19 pulp and paper companies and timber operators after two weeks of bargaining. They reached agreement on a contract that provides no wage hikes.

At the outset, the union, an affiliate of the AFL Carpenters' Union and bargaining agent for 30,000 workers in Ontario's forest industry, had demanded a 20 percent wage boost but forfeited this demand in return for three other major concessions.

They included improved union security; introduction for the first time in Eastern Canada's forest industry of two paid statutory holidays (Christmas and Labor Day); and maintenance of board rates paid by the workers in lumber camps.

Regarded in some circles as a positive step towards checking inflation, the agreement nevertheless was drawn up at a time when the demand for the finished pulpwood product has dropped.

For the first time in the Canadian forest industry, the revised union security clause requires that employes must become members of the union within 30 days of starting employment, instead of the 90 days provided in the previous contract.

The contract also guarantees that companies will give preference to union members in hiring, and broadens the job classification affecting organized workers.

Another key settlement factor was the maintenance, despite increased costs to the operators, of the board rate paid by the workers of $1.75 per day, which includes meals and accommodations.

Andrew V. Cooper, international representative of the Carpenters' Union and chairman of the union's 41-man negotiating committee, predicted the new gains further ensured industrial peace in Northern Ontario's basic wood producing industry.

Study Use of Potato Starch

The Potato Industry Council of Maine, Inc., is studying the possibility of using potato starch in the manufacture of paper, under the direction of Prof. Irwin Douglass, of the University of Maine.

National Container on Air

The National Container Corp. of Jacksonville, Fla., has inaugurated a Sunday afternoon radio program of classical music.

NEWS OF ASSOCIATIONS

Dr. Freudenberg Speaks On Lignin

Dr. Karl Freudenberg talked to two very interested groups of TAPPI members at the Manchester Hotel in Middletown, Ohio, on September 15. In the afternoon he conducted a round table for a group of thirty of the more serious organic chemists on the subject "Research on Natural and Artificial Lignin and Its Constitution." In the evening he spoke before a group of ninety-six giving a talk in less technical terms on "The Formation of Lignin in Plant Tissues."

The November 18, 1952, meeting of the Ohio Section will be at 6:45 p.m. in The American Legion Building in Middletown, Ohio. It will be a joint meeting with the Superintendents Association. The speaker will be H. B. Thacker of the Industrial Engineering Department of the Westinghouse Electric Corp. from East Pittsburgh, Pa. His subject will be "Electric Distribution Systems."

Program for Alkaline Pulping Conference

The Sixth Alkaline Pulping Conference of the Technical Association of the Pulp & Paper Industry will be held at the Battle House, Mobile, Ala., on November 12-14. Following is the tentative program:

November 12

9:30 a.m. Sulphur and Soda Recovery

1. "Recovery of Sulphur by Black Liquor Oxidation."
2. "Analysis of Recovery Stack Gases."
3. "Sulphidity Make-up by Use of Spent Semichemical Liquor."
4. "Addition of Sulphur for Sulphidity Control."
5. "Use of Flue Gases for Black Liquor Evaporation." Panel Discussion. Panel—C. L. Durkee, D. J. Murray Mfg. Co., Wausau, Wis.; W. J. Darmstadt, Babcock & Wilcox Co., New York, N. Y.; Frank Hockmuth, Combustion Engineering-Superheater, Inc., New York, N. Y.; and a representative of the Howard Smith Paper Mills Ltd., Cornwall, Ont.

2:00 p.m. Recovery Room Operation

1. "New Developments in Recovery Room Design," by Frank W. Hochmuth, Combustion Engineering-Superheater, Inc., New York, N. Y.
2. "New Developments in Recovery Furnace Design," by W. J. Darmstadt, Babcock & Wilcox Co., New York, N. Y.
3. "Instrumentation of Recovery Furnaces," by J. R. Upson and T. C. Johnson, Union Bag & Paper Corp., Savannah, Ga.
4. "Recovery Operation Corrosion Problems," by H. O. Teeple, International Nickel Co., New York, N. Y.
5. "The Liquor Cycle Operation from an Operator's Viewpoint," by J. L. Brown, Brunswick Pulp & Paper Co., Brunswick, Ga.
6. "Recovery Furnace Operation." Panel Discussion. Panel—Wilbur L. Orr, St. Regis Paper Co., Pensacola, Fla., a representative of the Howard Smith Paper Mills Ltd., and others to be announced.

6:00 p.m. Social Hour and Smorgesbord, Battle House, Mobile, Ala.

November 13

9:00 a.m. Reduction of Kraft Mill Odors

1. "Masking the Sulphate Mill Odor," by B. K. Tremaine, Industrial and Aromatic Section, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
2. "Experience in the Abatement of Kraft Mill Odors," by Ben. F. May, Gulf States Paper Co., Tuscaloosa, Ala.
3. "Design of Chimneys for Odor Dispersion," by F. L. Cate, Rust Engineering Co., Pittsburgh, Pa.
4. "Elimination of Odors With Chlorine Compounds."
5. "Electrostatic Precipitators for Abatement of Atmospheric Pollution."

2:00 p.m. General Session

1. "The Effect of Sulphidity on Bleached Sulphate Pulp Strength," by M. B. Pineo, Brunswick Pulp & Paper Co., Brunswick, Ga.
2. "Turbulent Suspension Burning of Wood Refuse and Other Fuels." A film and discussion by Otto de Lorenzi, Combustion Engineering-Superheater, Inc., New York, N. Y.
3. "Deterioration Losses in Stored Southern Pine Pulpwood," by Ralph M. Lindgren, Principal Pathologist, Forest Products Laboratory, Madison, Wis.
4. "Kraft Mill Effluents," by Anthony W. Pesch, Southern Kraft Div., International Paper Co., Mobile, Ala.
5. "Properties of Kraft Fibers from Various Woods and Localities as Related to Printing," by a representative of the Ohio Boxboard Co., Rittman, Ohio.

November 14

9:30 a.m. Visit to mill of the Southern Kraft Div., International Paper Co., Mobile, Ala.

2:00 p.m. Visit to mill of the Hollingsworth & Whitney Co., Chickawaw, Ala.

Ladies Program

November 11

2:00 p.m. Trip to World Famous Bellingrath Gardens.

(Continued on page 54)

LITERATURE

Accuray Beta Gauges. (Bulletin R-D-52) Contains sales copy, simplified diagram of Beta Gauge principles and theory of operation. Industrial Nucleonics Corp., Columbus, Ohio.

Allis-Chalmers Frame Type Centrifugal Pumps. (Bulletin 52B6691A) Includes sales copy, cross-section diagrams of three available types showing the component parts, together with performance curves. Allis Chalmers Mfg. Co., 994 S. 70th street, Milwaukee, Wis.

Chief Sandusky Shower Pipe. (Specification Bulletin 136) Contains detailed technical information, installation procedure and water consumption data. Sandusky Foundry & Machine Co., Market and Fulton streets, Sandusky, Ohio.

Edward Cast Steel Gate Valves. (Catalog Section 12-E) Includes complete details of design, material specifications, pressure and temperature ratings and dimensional details and weights. Also describes special testing procedure designed to assure two tight-fitting faces. Edward Valves, Inc., 1200 W. 145th street, East Chicago, Ind.

Factors Influencing Industrial Plant Location. (Brochure) Compilation of 64 basic questions management must answer and evaluate in selecting the best site for a new plant. Walter Kidde Constructors, Inc., 140 Cedar streets, New York 6, N. Y.

Highlights in the History of Forest Conservation. (Information Bulletin 83) Presents chronologically the more important State and Federal laws dealing with forestry; action taken under those laws, and the development of forestry organizations and the forestry profession from 1620 to 1951. Prepared by the U.S.D.A. Forest Service, may be obtained from Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price 15c.

Indestructible Plastic. (Booklet) Describes characteristics and uses in processing industries, paper mills, etc. New York Belting & Packing Co., 1 Market street, Passaic, N. J.

Industrial Waste Treatment Guide. (Bulletin B-I-F-4) Contains tables showing different types or combinations of unit treatment processes for more than 50 wastes, equipment used and available. A spread flow diagram and installation photos of equipment are included. B-I-F Industries, Inc., 345 Harris avenue, Providence 1, R. I.

Lifeblood. (Brochure) A story of Canadian trees and how Abitibi is achieving a perpetual harvest, and thus fulfilling their share of responsibility to preserve forests and waters. Abitibi Power & Paper Co., Ltd., 408 University avenue, Toronto, Ont.

A Lot of Things Besides Pumps. (Booklet) Prepared by cartonist-author Don Herold, tells what these products do, how they work and the import of it all. Worthington Corporation, Harrison, N. J.

M & M Hogs. (Catalog H152) Illustrated sales copy includes the Flat Face Sectional Cylinder type used in the processing of pulp, bark, paper, etc., and reduction of waste for salvage. Also briefly describes the Air Fluff Paper Shredder. Mitts & Merrill Co., 1009 S. Water street, Saginaw, Mich.

U.S. Verticlosed Motor. (Bulletin) Illustrates motor with drawings of individual features in full color, engineering data and progressive views of pump motors showing continuous improvement during past 40 years. U. S. Electrical Motors, Inc., Box 2058, Los Angeles 54, Calif.

Chemical Investments—An Analysis of Research, Growth and Finances in the Chemical Industry. (Book, 93 p., Price $5.00) Includes charts and tables, by John F. Bohmfalk, Jr. With facts and figures, interprets the relation of research and sales growth for major end-product groups in the chemical industry for 20 leading companies in the field. It presents a tool for evaluating investments in chemical process companies and examines their earning prospects. The companies examined individually are: Du Pont, Mathieson, Monsanto, Dow, Merck, American Cyanamid, Allied, Union Carbide, Victor, Spencer, Hooker, Heyden, Air Reduction, Hercules, Diamond Alkali, Rohm & Haas, Atlas, Penn Salt, and Commercial Solvents. Chemonomics, Inc., 400 Madison avenue, New York 17, N. Y.

Waste Paper
We are always in the market for combination truckloads or carloads of high grades and specialties
write or wire us for quotations
PIONEER PAPER STOCK COMPANY

ASSOCIATIONS

(Continued from page 53)

6:00 p.m. Social Hour and Smorgesbord, Battle House, Mobile, Ala.

November 12

12:30 p.m. Luncheon at the Grand Hotel across Mobile Bay.

Mobile is an interesting city. The conference program is so arranged that all in attendance will have an ample opportunity to see the historical places and fully enjoy the Deep South.

Management's View of Technical Staff

"Great days of research in the local industry are still ahead" members of the Kalamazoo Valley section of TAPPI were told at their October meeting in Kalamazoo.

Speakers included George K. Ferguson, president of the Watervliet Paper Co., and Maxwell Bardeen, president of the Lee Paper Co.

The two talks, under the heading "Management's View of Technical Departments," preceded a panel discussion in which Fred B. Buchanan, Dwight Stocker, James Wise and John Wood amplified the opening remarks.

Among the points emphasized was the present tendency of mill management to draw on technical staff men to fill top management positions in non-laboratory assignments.

Columbia's Construction Camp Burned

PRINCE RUPERT, B. C.—Construction camp buildings at the Columbia Cellulose pulp mill near Prince Rupert were swept by fire and one man was injured when he jumped from the top story of a flaming bunkhouse. Only one building of the original construction camp was saved as the fire destroyed three double bunkhouses, the commissary kitchen and heating plant.

SUPPLIERS

Jack D. Porter

GOODYEAR TIRE & RUBBER CO. has added Jack D. Porter to the sales promotion department, where he will coordinate the advertising and sales promotion activities of the chemical products division.

UNITED CLAY MINES CORP., Trenton, N. J. have announced purchase of stock control by thirty executives and employes for about one million dollars.

Ogden A. Kantner, foremrly vice-president and general manager, was named president. He heads the group of new employe stockholders.

The arrangement was in accordance with the wishes of the late president and company founder, George C. Crossely, who died in June, 1951. The million dollars was paid to his executors.

G. F. Griffiths

ACME STEEL CO., Chicago, has appointed G. Findley Griffiths vice-president of sales.

GODFREY L. CABOT, INC., Boston, Mass., manufacturer of carbon blacks and producer of the new white mineral wollastonite introduced to industry just five months ago, has acquired the Georgia Pigment Co., Sandersville, Ga. The Cabot companies now offer several quality grades of

Dings Double-Barreled Protection Virtually Eliminates Tramp Iron Damage

Florida Mill Uses Rectangular Magnet Over Belt Plus Electromagnetic Head Pulley

THE BIG DINGS Rectangular Suspended Magnet shown digs down as deep as 18″ to yank tramp iron out of wood chips passing rapidly beneath it. If anything gets by this one, it's likely to be close to the belt. The electromagnetic head pulley is at maximum effectiveness here and therefore completes the iron removal job.

Here's what the plant engineer of this Florida mill says . . . ***"Since this installation we have not lost 5¢ in machinery damage or 5 minutes in downtime due to tramp iron. From our experience, we cannot too highly recommend the installation of magnets performing the same work these are performing . . . We are 100% satisfied and feel it is one of the best expenditures we have made."***

NEW! DINGS RM RECTANGULAR—the most powerful tramp iron magnet available—extracts iron through distances up to 36". Write for details.

"100% satisfied" . . . a statement made from the field that offers PROOF of performance.

For details on either or both of these magnets just ask for the Rectangular or Pulley Catalogs.

DINGS MAGNETIC SEPARATOR CO.
4711 W. Electric Avenue, Milwaukee 46, Wisconsin

Dings MAGNETS

Georgia kaolin in commercial quantities for use in the paper and ceramic industries. Installation of improvements in the manufacturing facilities of the company, and establishment of a new technical control laboratory at Sandersville has already been begun.

The Georgia Pigment Co. will retain its name in the new Cabot operation. As in the past, William W. Kingman will be general manager, and J. T. Houk will continue his sales activities in the company.

RICE BARTON CORP. has started construction of new facilities and additional assembly space which will add 25,000 sq. ft. to their present manufacturing area. The principal new components of this area will be:

1. A one-story steel and glass building to be used for manufacturing facilities and small assemblies.

2. A new manufacturing building approximately 40′ wide x 210′ long for the manufacture of paper machine dryers with facilities capable of handling rolls 72″ in diameter x 300″ in length.

3. A roofed area between its existing pattern storage building and its existing lathe building. This area, approximately 100′ x 30′, is adjacent to the foundry and will be used for additional chipping and cleaning space.

Additional facilities will make room for new dynamic roll balancing machinery which is the largest of its kind ever to be built. It is capable of the utmost accuracy in dynamic balancing of rolls up to a surface speed of 7,000′ per minute and is designed to handle rolls 300″ long.

Other equipment which will be installed includes a 6″ bar horizontal boring machine, several smaller horizontal boring machines, a large planer, a large surface grinder, and other smaller machine tools.

Among the orders which Rice Barton has on their books is a pulp machine for Ketchikan Pulp Co., Ketchikan, Alaska — the first installation of the pulp and paper industry in Alaska. It is also building a pulp drying machine for Rayonier, Inc., for their new mill in Doctortown, Ga.

DOMINION, SCOTT, BARRON, LTD. has been formed by several United Kingdom companies and a large Canadian firm to produce in Canada process equipment and machinery for the pulp and paper industry as well as for some other industries.

The British interests are Henry Balfour & Co., of Levin, Fife, Scotland; George Scott & Son (London) Ltd. Ernest Scott & Co., and W. S. Barron & Son Ltd., of Gloucester, England. The Canadian company is Dominion Wheel & Foundries Ltd., of Toronto, Ont., which is associated with the Canada Iron Foundries Ltd. The Canadian firm is bringing manufacturing and national sales facilities to the new organization, and the British companies are providing special licenses and patents as well as other assets.

Edgar E. Ritcey, president of the Dominion Wheel & Foundries Ltd., is president and chairman.

JACKSON AND CHURCH CO., Saginaw, Mich. has promoted L. F. Reimann to assistant vice-president of manufacturing.

Associated with the firm for 27 years, Mr. Reimann has been superintendent of J-C's two plants in the Saginaw area since April, 1951.

DELAVAL STEAM TURBINE CO., Trenton, N. J., has appointed R. G. Baker as Regional Sales Representative. His representation will cover the company's Chicago, Detroit and Minneapolis operations, but he will continue to make his headquarters in Chicago. He has been manager of the Chicago District Office since 1934.

DeLaval has also appointed C. C. Bray as manager of the Chicago District Office. He will assume charge of all sales activities of the company in this territory. He was formerly manager of the Midwest District Office of the company's Standard Product Division.

CORN PRODUCTS DEPARTMENT, ANHEUSER-BUSCH, INC. has named Arthur E. Weber, general sales manager of the Yeast, Malt and Corn Products Division to succeed Arthur C. Mohr who is now sales manager, Specialty Products Division of The Seymour Packing Co., of Topeka, Kan.

Standard Bag in New Quarters

Standard Bag Sales Co., Inc., is occupying its new plant at 29-10 Hunters Point avenue, Long Island City, New York. Housed in the new plant under one roof will be the manufacturing facilities previously in Brooklyn and the executive offices previously at 521 Fifth Avenue, New York.

Hudson Opens Philadelphia Office

Hudson Pulp & Paper Corp. has opened a division office at 913 Montgomery Avenue, Narberth, Pa., in the Philadelphia area, under the direction of S. C. Baron, Atlantic Division manager. Hudson's Atlantic Division encompasses the states of Southern New Jersey, Pennsylvania, Delaware, Maryland and Virginia.

THE CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK
Manufacturer of
Machinery and equipment for Mechanical and Chemical Pulp Mills and Special Machinery

MISCO
STAINLESS STEEL CASTINGS
FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
MICHIGAN STEEL CASTING CO.
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for the addition of moisture and chemicals
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Write for new TECHNICAL BULLETIN

GOVERNMENT DOINGS

Speed Up New Industry Earnings Procedure

Details of a faster procedure by which an industry with impaired earnings can qualify more promptly for higher ceilings under the OPS industry earnings standard were announced by the OPS. No change in the standard itself is involved.

The new approach is intended to reduce materially the time required to make the studies needed to justify a ceiling price increase under the industry earnings standard.

It is anticipated increased use will be made of the industry earnings standard as a result of increased industrial costs, including wages, materals and freight rates.

The OPS industry earnings standard was established by the Economic Stabilization Agency in April, 1951, as an interpretation of the requirements of the Defense Production Act that ceilings be fair and equitable. It provides that an industry whose earnings before taxes based on net worth are less than 85 percent of the average earnings of the best three out of four years from 1946 to 1949, is entitled to apply for higher ceilings in order to bring earnings up to that level.

The industry earnings standard has been used as a means of appropriate price adjustment for a number of widely-varied industries, including manufacturers of semi-vitreous china dinnerware, glass containers, bakery products and zinc die castings, and distributors including beer wholesalers and retail grocers.

One of the problems encountered in applying the standard has been the difficulty in obtaining promptly necessary data to determine the required adjustments in ceilings. Heretofore OPS has relied mostly on information submitted voluntarily in response to the request of the Director of Price Stabilization. Some firms called upon have supplied such fragmentary information as to be useless.

In carrying out industry earnings standard surveys under the new streamlined procedure, it will continue to be the policy of OPS to minimize the burden of reporting placed on industry. It is therefore the intention of OPS to restrict requests forin formation to the smallest number of companies sufficient to give reliable rsults.

Under these circumstances, it is necessary that those companies called upon respond promptly. Consequently, as a part of the new procedure, OPS has issued General Overriding Regulation 37, effective September 16, 1952. The new regulation formally sets forth the authority under the Defense Production Act and the manner by which the Director of Price Stabilization may require reports from industry, including information necessary to carry out industry earnings standard surveys. Where appropriate, letter orders will be issued.

It is not anticipated that the regulation will have to be invoked often, since it is in the interests of members of an industry entitled to relief under the standard to furnish information as promptly as possible. The regulation, however, will be invoked where necessary to avoid delays which would otherwise result from the failure of individual concerns to supply the information needed.

Based on its experience to date in applying the standard, OPS has worked out a new and faster procedure which has been put into effect. The new procedure involves the following changes:

1. Internal administrative procedure has been greatly simplified. Responsibility for each step of the operation has been reassigned and the number of internal policy clearances required has been reduced.
2. Clearance of survey plans will be expedited.
3. The type of information required has been reduced to the minimum needed to permit sound administrative decision. Insofar as possible, industry will be asked to supply figures which are readily available and normally prepared by business for its own use. The use of special forms will be largely eliminated.

Heretofore it was necessary for OPS to prepare individual forms and data requests for each survey. Frequently the information sought had to be especially compiled for OPS by the companies queried.

Requests for information will be standardized and will call for the following typical data:

(a) Regularly prepared financial statements for each year in the base period from 1946 to 1949.

(b) For the last complete accounting year, regularly prepared financial statements, with details covering the following: (1) Wages and salaries; (2) materials costs; (3) freight in and freight out; and (4) information regarding costs disallowed by the provisions of Price Operations Memorandum 25, issued February 15, 1952, which sets forth details of the industry earnings standard.

(c) Information in summary form regarding increases in the cost of any of the items designated above, occurring after the beginning of the last completed accounting year.

(d) Estimates of price levels below ceilings.

4. Data will be solicited from companies selected impartially in such a manner as to give balanced representation to the industry, taking into consideration the nature of the industry, the importance of large, small and medium companies, and administrative limitations.

It is the expectation of OPS that the stream-lined procedure will receive a greater measure of cooperation from industry and will permit prompt relief under the industry earnings standard to industries which can qualify.

Authorize Cotton Linters for France

WASHINGTON, D. C.—Cotton linters, bleached and cotton pulp, totaling $400,000, was among MSA procurement authorizations announced this week. The purchase is for France.

NPA Sees End of Steel Shortage

WASHINGTON, D. C.—NPA officials reported they expect the steel shortage to be over by the second quarter of 1953, and that it is "highly probable" some extra steel may be available during the fourth quarter this year.

The military services have not taken all the steel earmarked for their use, it was pointed out. The set-aside program only operates through the remainder of 1952, and with the unexpectedly fast return to normal output by the steel industry, it might be possible to revoke the set-aside order earlier.

Lower Copper Quotas

WASHINGTON, D. C.—October allocation quotas of refined copper for producing copper wire products, brass mill items, etc., were lowered from the monthly average maintained in the third quarter, NPA reported this week, although higher than for the months preceding June of this year.

The decline in October was attributed to a decreased availability of copper from both domestic and foreign sources.

The uncertainty about the over-all copper outlook for the fourth quarter of 1952 is plaguing brass mill products manufacturers, the agency was advised. Shipping difficulties have hindered the more rapid arrival of Chilean copper, it was reported.

Plan Chemical Industry Expansion

WASHINGTON, D. C.—The chemical industry will invest approximately $5 billion to expand production facilities in the four year period ending in January, 1955, the NPA reported last week.

The estimate includes only production coming under jurisdiction of NPA's chemical division, and does not cover expansion for synthetic fibres, rubber, fats and oils, petroleum, agricultural and mineral products which may be used by chemical manufacturers but are handled by othr NPA divisions or claimant agencies.

Because of the changing demand for various chemical materials for both essential civilian and military uses, the division is maintaining a running review of supply and requirements for important chemicals, it was reported.

Applications for rapid tax amortization via CN's now cover facilities with a value exceeding $3 billion, while certifications so far provide for facilities valued at over $2,360,000,000. Expansion programs, it was pointed out, will provide for unprecedented increased production of chlorine, nitrogen, styrene; notable increased output for sulfur, sulfuric acid, phenol, naphthalene, phthallic anhydride, formaldehyde, ethylene oxide, ethylene glycol, methylene chloride and others.

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Engineers and Constructors
Pittsburgh, Pennsylvania
Complete Service for
PULP AND PAPER MILLS—PLANTS AND FACILITIES
DESIGN, CONSTRUCTION, MODERNIZATION

OBITUARIES

Ernest Lyndon McKee, 81, long prominent in business, industrial and political affairs in Western North Carolina, died October 6 in the C. J. Harris Community Hospital at Sylva, N. C., after a long illness. He was vice-president and manager of the Sylva Paperboard Co. and had served the Mead Corp. of Dayton, Ohio, owner of the Sylva company, for more than a quarter of a century.

J. Pierre Rolland, 66, president of the Rolland Paper Co., Ltd., died in Montreal, Que.

N. J. MacDonald, 62, superintendent of the Soda Mill at Howard Smith Paper Mills in Cornwall, Ont., since 1928, died in the Kingston General Hospital on October 7 following a month's illness. He joined the Royal Flying Corps in 1915 and served overseas, being severely injured in action. On his return, he took a position with a paper mill in the United States, coming to Cornwall's soda mill in 1926. He was a member of the American Pulp and Paper Superintendents Assn.

John Martin, 82, a native of Howick, Que., and founder of the Martin Paper Products Ltd., passed away in Winnipeg, Man., on October 6.

Charles J. Kaiser, 50, vice-president and general manager of the Stevens Paper Co., of Windsor, Conn., died October 9 at Hartford Hospital. He joined the paper company in 1925.

Otto Metzger, 82, for many years recognized as one of the Mid-South's outstanding paper merchants, passed away at his hotel apartment in Memphis, Tenn., October 10, following a long period of ill health.

Mr. Metzger, a native of Germany, came to the United States at an early age. His first job was with the Atlanta Paper Co., Atlanta, Ga. He came to Memphis in 1897 and became vice-president and general manager of the Memphis Paper Co., a post he held for many years.

AMERICAN PULP AND PAPER ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1952	Sept. 6 65.9	Sept. 13 86.1	Sept. 20 86.8	Sept. 27 90.7r	Oct. 4 89.1
1951	Sept. 8 78.8	Sept. 15 99.1	Sept. 22 99.8	Sept. 29 99.5	Oct. 6 101.0

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1951	99.3	101.3	101.9	102.8	102.2	100.1	88.6	97.7	94.3	100.3	98.0	90.0	98.0
1952	97.1	97.8	95.1	90.6	88.6	88.7‡	75.5‡	86.7‡	86.5‡				

COMPARATIVE YEARLY SUMMARIES

	1945	1946	1947	1948	1949	1950	1951	1952
Year to Date	88.6	100.7	103.7	97.0	86.5	95.4	99.7	89.9
Year Average	85.4	96.9	101.7	92.1	83.7	95.8	98.0	

‡ Preliminary.
r Revised.

PAPERBOARD OPERATING RATIOS†

1952	Sept. 6 72	Sept. 13 93	Sept. 20 93	Sept. 27 94	Oct. 4 95
1951	Sept. 8 71	Sept. 15 94	Sept. 22 90	Sept. 29 90	Oct. 6 88

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1951	102	105	104	105	104	103	84	94	86	87	82	75	94
1952	81	86	85	82	82	82	71	89	88				

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

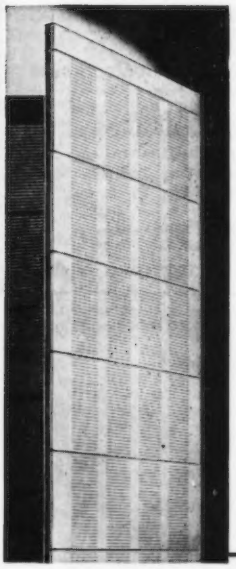
Note: In the above tables *all* the ratios shown are on the basis of a normal 6 and 7 day capacity.

† Per cents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.

MAGNUS-MADE

FABRICATED SCREEN PLATES

for High Plate Capacity — Long Plate Life



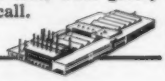
"Hardy" fabricated screen plates, made by Magnus of chrome-nickel-steel or inconel, have a high-strength, thin sheet design that's specially engineered for *maximum flow*. About 40,000 of these plates are now in service, with performance records that prove these three important advantages:

1. Increased Plate Capacity. The thin sheet eliminates relief milling, and with recommended arrangement, substantially increases capacity per plate.

2. Longer Life. Slots remain sharp, side walls highly polished for the life of the plate. There's greatly improved corrosion resistance, too.

3. High, Sustained Yield. Fabricated screen plates assure consistent, uniform quantities of cleaner pulp. This means improved production at reduced operating costs.

Complete information is yours on request. Or if you like, we'll gladly have an engineer call.



MAGNUS METAL CORPORATION, *Fitchburg, Mass.*

Metalworkers for the Paper Trade

SCREEN PLATES: BRONZE, CHROME-NICKEL-STEEL, AND INCONEL
VALVES: GATE, SWING CHECK, BLOW, GLOBE, ANGLE AND "Y"

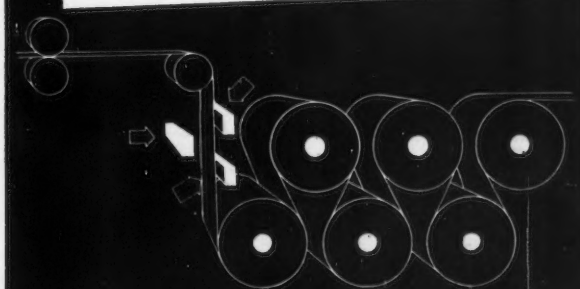
Red Ray Burners

increase *Drying Capacity*

Red-Ray Burners are extremely adaptable; they can be operated on natural gas, manufactured gas, butane or propane.

Controls and safeguards are furnished as required by the specific installation.

Further information concerning your particular drying requirements will be furnished by us without obligation. We invite your inquiry.



Red Ray Manufacturing Co., Inc.

455 West 45th Street · New York 19, N.Y.

NEARLY 3 TONS TO A "BITE"

• THAT'S the way to speed your work and cut costs of unloading, stacking or rehandling pulpwood and logs. Blaw-Knox Pulpwood Grapples, like this one which is picking up almost 3 tons in one grab, are especially designed and built in a wide variety of sizes and types to meet the exacting needs of the Paper Industry.

MORE AND MORE PULP AND PAPER COMPANIES ARE USING BLAW-KNOX PULPWOOD GRAPPLES

34 leading pulp and paper companies have recently placed repeat orders for Blaw-Knox Pulpwood Grapples. Bulletin 2302 tells why—actual on-the-job illustrations show how others are cutting rehandling costs. Send for your copy of Bulletin 2302 today!

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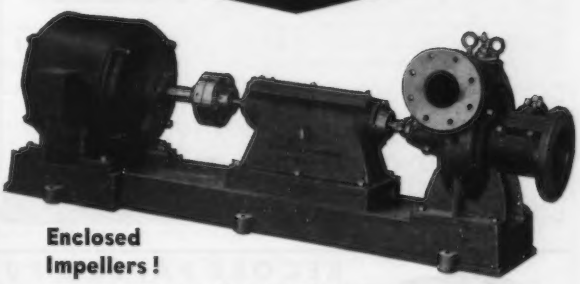
REALLY *TROUBLE-FREE* STOCK PUMPING!



Enclosed Impellers!

"Buffalo" Diagonally-Split Stock Pumps are not only built ruggedly to take the punishment of paper mill service—but their impellers are enclosed and NON-CLOGGING. They do not depend on close running tolerances for efficiency—thus maintaining original high efficiency, avoiding "wedging" and wear! It's worth investigating! WRITE FOR BULLETIN 953-G.

"Buffalo"

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Williams High Speed Centrifuge

The Most Rapid Method for the Reduction of Stock to a Definite Moisture Content from which Moist Samples May be Taken for Accurate Freeness Tests. For the Determination of Consistency of Beater and Machine Stock, Fiber in White Water, etc.

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High capacity . . . permanent true slot alignment . . . Freedom from "strings" and plugged-up slots.

Get a full day's work from your screens with these remarkable plates. Furnished in tough, "Fitchburg Bronze," plain or chromium plated.

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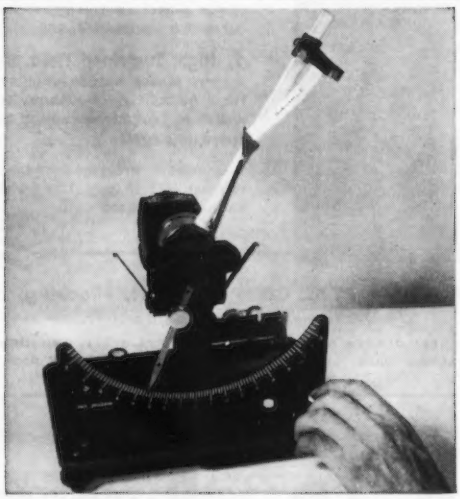

Test and Record Stiffness of Most Papers and Paper Boards in 21 Seconds

That's all it takes to measure paper up to 0.25" thick with the motorized Gurley Stiffness Tester. It easily handles tissue, newsprint, book, bonds, ledgers, industrial papers, cardboard and carton stocks, and permits a wide range of readings from 1 to 3,358,720.

More than 300 of these aids to faster, more efficient measurement are used in leading mills and laboratories.

Write for Bulletin No. 1400. It describes the motor-driven and hand-operated models as well as other Gurley paper-testing instruments. W. & L. E. Gurley, 520 Fulton Street, Troy, New York.

RECORD PAPER & PULP STOCK VALVES "BONNETLESS" SELF CLEARING - - - "RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M., all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

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MEN WANTED—POSITIONS OPEN

We can place—Plant supt. experienced in converting kraft grocery and specialty bags, $12,000 yr. (South); purchasing agent large plant $7500 yr.; executive controller; night supt. Cylinder board mill, attractive salary; supt. newsprint mill; asst. supts. Cylinder and Fourdrinier machine mills; Cylinder and Fourdrinier machine foremen who may be qualified to act as asst. supt. and supt.

Power plant supervisors, chief engineers, master mechanics, machine shop foremen, designers and draftsmen; asst. program director of engineering; flat and square machine adjusters, converting plants; chemists, chemical engineers and laboratory men, including technical graduates with or without practical experience; salesmen for fine papers, folding cartons, corrugated boxes, newsprint and other lines; color matcher; printing foreman; laminating foreman; machine tenders, back tenders and beater engineers.

LIST YOUR CONFIDENTIAL APPLICATION WITH US to keep informed of attractive positions open in the pulp and paper mills.

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Opening for 1st class man to supervise the operation of two Yankee Paper Machines making high grade tissues and Specialty papers. Must know paper making and be able to handle men. Salary commensurate with ability and experience. Location is Eastern Michigan.

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We will train in gravure technique but a well founded knowledge of graphic arts is essential. Send full resume and photo with reply, which will be held confidential. Box #52-438 care Paper Trade Journal.
O-17

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FINE PAPER MANUFACTURER—with national distribution, wishes to expand their sales force. Advise experience, references, pay wanted, willingness to travel. Address Box 52-433 care Paper Trade Journal. O-17

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National Manufacturing concern offers opportunity to recent college graduate with technical education as Junior Buyer. Applicant must have education or experience in the pulp and paper field. Age limit 26 years. Please forward complete resume stating education, experience, and salary requirements. Address Box No. 52-441 care Paper Trade Journal
O-17

NIGHT SUPERINTENDENT

For One Machine Folding Boxboard Mill Producing 50 Tons, Located in Miami, Florida. Excellent Opportunity For One Who is Now Tour Boss or Assistant Superintendent. Good Pay Plus Bonus. Box 52-421 care Paper Trade Journal. O-31

GENERAL ACCOUNTANT

Under general direction of comptroller, to supervise general accounting dept., maintain general ledger, develop financial statements, prepare all tax returns, and handle operating budgets. Should have college degree plus at least five years of accounting experience in paper industry. In reply summarize training and experience. Address—Bowaters Southern Paper Corporation, Calhoun, McMinn County, Tennessee. TF

PAPER BOARD MILL manufacturing Folding Boxboards, desires thoroughly experienced Back Tender and Beater Engineer. High weekly earnings, steady work, advise full background and experience. Miami Paper Board Mills, P. O. Box 197, Miami International Airport, Miami, 48, Florida. O-24

PULP RESEARCH AND DEVELOPMENT. Expanding Research Department needs Paper Chemist or Engineer with background of development work in impregnated and specialty pulps. National firm. Location Upper Midwest. Address Box 52-431 care Paper Trade Journal. O-24

HELP WANTED

PAPER MILL SUPERINTENDENT for two-machine newsprint mill in Eastern Canada. Must have long background and thorough experience in newsprint, and be able to take complete charge of Machine Room. Reply giving entire personal history, experience, references and salary expected to Box 52-416, Paper Trade Journal. O-24

PLANT ENGINEER

To coordinate activities of design engineering firm and contractors during construction. Direct all engineering and maintenance in completed mill. Should have not less than ten years experience in pulp and paper mill maintenance. Experience in maintenance of sulphate pulp production facilities necessary. Familiarity with groundwood and newsprint production desirable. Summarize experience. Bowaters Southern Paper Corp., Calhoun, McMinn County, Tennessee. TF

HELP WANTED

Starting our second machine. Need Machine Tenders, Back Tenders, Third Hands, and Beater Engineers. One straight Fourdrinier and One Yankee Fourdrinier. Manufacturing Wrappings, Specialties, Corrugating Medium, and Light Weight Chip. Best of Labor Relations, Insurance, and Liberal Pension Plan. Mill Located about 40 miles from Chicago, Ill.

PRAIRIE STATE PAPER MILLS
JOLIET, ILLINOIS PHONE 3-3441 OR WRITE
TF

TOUR BOSS—Shift work. Two machine mill located in northeastern Pennsylvania. Must have thorough experience waxing base stock and lightweight tissues. Reply giving entire personal history, experience, references and salary expected to Box 52-444 care Paper Trade Journal. N-7

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 52-76 care Paper Trade Journal. TF

SITUATIONS WANTED

SITUATIONS WANTED

ATTENTION

PAPER, PRINTING, PUBLISHING EXECUTIVES

Top-level Executive available for managerial position in Paper, Printing, Publishing, either Sales or Production. Well-known and recognized in the Graphic Arts and Paper Industry, wishes major opportunity to demonstrate his profit-making capabilities for some outstanding company. Salary 5-figures. Requests interview or will send details. Address 52-428 care Paper Trade Journal. O-17

RATES FOR CLEARING HOUSE ADVERTISING

HELP WANTED—75c a line. Minimum charge $3.75.

SITUATIONS WANTED—75c a line. Minimum charge $3.75. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—75c a line. Minimum charge $3.75.

WANTED—75c a line. Minimum charge $3.75.

OPPORTUNITIES—75c a line. Minimum charge $3.75.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional

Address replies to advertisements appearing under Box Number in care of
PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

SITUATIONS WANTED

PRODUCT DEVELOPMENT

Man experienced in all phases of paper research and sales development interested in organizing or taking charge of similar project for small or medium sized mill. Responsible for papers nationally advertised and currently sold in volume. Write Box 52-437 c/o Paper Trade Journal. O-17

CHEMICAL ENGINEER

B.Ch.E., Family, 38.

Desires to re-associate with pulp and paper industry after absence due to war and subsequent developments. Box 52-436 Paper Trade Journal. O-24

SUPERINTENDENT—25 years practical experience manufacturing folding boxboard and high grade light and heavy weight specialties from sulphite, sulphate, groundwood and old paper stock. Aggressive, capable man, good references. Address Box 52-402 care Paper Trade Journal. O-24

EXPERIENCED Fine and Coarse Paper Chemist with technical and sales background, desires connection with paper mill. Address Box 52-423 care Paper Trade Journal. O-17

WANTED—Position as Chief Engineer. 20 years experience in Steam Power Plants and heat balance work. Age 46, married. Have first class engineer's license and best of references. Address Box 52-424 care Paper Trade Journal. N-14

SUPERINTENDENT with outstanding operating record and many years experience on Kraft and Sulphite Specialties etc., desires a change in connections. No objection to smaller mill looking for lower cost and improved operating conditions. Middle age. Perfect health. Technical background. References. Address Box 52-425 care Paper Trade Journal. O-17

FOR SALE

FOR SALE

1—Rubber covered Suction Press Roll 25" dia., 149" drilled face, anti-friction bearings, Herringbone gear and back drive. Will shorten this roll to fit your machine and guarantee job.

OSBORNE PAPER MILL EQUIPMENT CORP.
FULTON, N. Y. Tel. 2-4254
TF

FOR SALE—50,000 gallon capacity closed Redwood Water Tank. SEAMAN PAPER COMPANY, Otter River, Mass. TF

FOR SALE

FOR SALE

Operating Rotogravure plant, including cylinder making facilities, with 500 cylinders suitable for re-etching.

All Champlain presses complete with variable speed drives, etc.

1—5 color, 14", with sheet cutting equipment, slitter and rewinder.

1—4 color, 9", with reverse coater attachment.

1—3 color, 9".

Also, 1—2 color, 10" experimental laboratory press.

Miscellaneous equipment includes 38" Lawson cutter, 30" and 40" Langston & Cameron slitters, waste baler, machine shop, high pressure steam boiler, air conditioner, etc.

Building and yard approximately 25M sq. ft. including outside fireproof ink storage building.

Building available for purchase or long term lease.

Corporation with substantial tax loss also available.

Can be seen by appointment. Box #52-439 care Paper Trade Journal. O-17

CUTTERS FOR SALE

One Clark-Aiken 64" Simplex Cutter with Maxon Overlapping Layboy.

One Clark-Aiken 88" Simplex Cutter with Maxon Overlapping Layboy.

One Clark-Aiken 124" Simplex Cutter.

One Hamblet 112" Simplex Cutter with Moore & White Layboy.

One Moore & White 50" Simplex Cutter.

The Clark-Aiken Co.
Lee, Mass.
Tel.—Lee 700 & 701 D-26

FOR SALE—72" Hamblet Sheeter, ready immediate delivery, with Layboy and 12 roll back-stand, A.C. Motor. Very attractive price. For further particulars address Box 52-429 care Paper Trade Journal. O-24

FOR SALE—Large quantity used 6" O.D. x 4½" I.D. Elixman cores in various lengths, with caps. Bargain. Pollock Paper Corp., Attn. E. S. Bromberg, Dallas, Texas. O-24

FOR SALE

FOR SALE

Complete Paper Mill including 91" Harper Yankee Machine, Coating and Mixing Equipment, Niagara Beaters, Ditts Hydrafiner, Monarch Jordon, 5 Roll Calender Stack. Ample storage and shipping space. Railroad siding, excellent water. In operating condition. Weights 10 to 30 pounds. Convenient to Eastern metropolitan markets. Address Box 52-427 care Paper Trade Journal. O-24

FOR SALE

Bronze Fourdrinier Wires

1—115" x 34'10"—75/52 Plain Mesh
3—115" x 34'10"—75/56 Twill Mesh
6—100" x 35' —75/56 Twill Mesh

Address Box 52-410 care Paper Trade Journal. O-17

FOR SALE

Two—(2) Toilet paper converting machines. Perforates 4½ and 5" lengths, also 7½ and 13½" lengths for towels.
Two (2) twin type singlefold towel interfolders length 10½", width adjustable.
E. F. Woodhead, 711 DeKalb St., Norristown, Pa.
O-17

FOR SALE

42" Camachine No. 6.
48" Kidder model CH Slitter.
72" Cameron 8-10 Slitter.
50" Hamblet Sheeter, with Back-stand.
100" Dillon Sheeter, with Back-stand.
Back-stands, made to order—any size.
THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.) TF

FOR SALE — FACIAL BOXES. Standard large size 300 to 400 count. $7.50 per thousand. Address Box 52-440 care Paper Trade Journal. O-17

FOR SALE—Tissue Mill located 20 miles above Albany, N. Y. 72 inch Cylinder Machine. Priced right. Principals only. Address Box 52-442 care Paper Trade Journal. N-7

FOR SALE—25 x 38 John Thomson eccentric action Cutter & Creaser; Ryan High Die Press, upper platen 18 x 33; Seybold four-rod Embosser, 22 x 28, with gas heated head. For further details address Box 52-426 care Paper Trade Journal. O-17

FOR SALE—One 14 x 14 Chandler & Taylor Variable Speed Engine 300—50 revolutions per minute, 60" x 26" flywheel equipped with Armstrong governors and Moore & White speed changer. This engine is on its original foundation and can be inspected at any time. Address Box 52-417 care Paper Trade Journal. N-28

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE: We are offering for sale a complete cylinder machine mill, 90" trim, with production capacity of around 55 tons per 24 hours.

The mill is located in the Midwest and has ample acreage for expansion, railroad facilities, plenty of water, no labor problems, brick buildings of suitable design and construction.

The owner would like to dispose of this mill as soon as possible. For further information, write Shartle Brothers Machine Company, Middletown Ohio, Used Equipment Department.

O-17

1 Sandusky Suction Couch Roll, 126" drilled face x 22" diameter.

FOR SALE

BARKING DRUM
1—10' x 30'.

BEARINGS
72—Top and bottom Dryer Bearings 7" diameter.

BEATERS
1—Dilts Iron Tub Laboratory Beater Beater roll 14" diameter x 10½" face.

CALENDER STACKS
1—9 roll 56" Supercalender Stack.
1—9 roll 68" Calender Stack.
1—4 roll 72" Calender Stack. (Extra heavy duty).
1—3 roll 60" Friction Calender Stack. Two iron rolls and 1 Paper or Cotton Roll.
1—12 roll 116" Calender Stack.
1—9 roll 84" Supercalender Stack.

CHEST
1—Cast Iron Stock Chest, 25' long x 6' high (With agitator).

CHIPPERS
1—90" Murray 4 knife Chipper—anti-friction bearings.
1—84" Carthage 4 knife Chipper.

CLASSIFINER
1—Dilts Classifiner, practically new, with motor.

CRUSHER & HAMMERMILL
1—Murray Clap Crusher.
4—Jeffrey Hammermill.
1—#6 Mitts & Merrill Hog.

CYLINDER MOLDS
2—30" diameter x 72" face.
2—36" diameter x 54" face.
4—36" diameter x 84" face.
1—48" diameter x 72" face.
1—30" diameter x 92" face.
1—42" diameter x 120" face.
4—42" diameter x 130" face.
1—48" diameter x 117" face.
2—36" diameter x 110" face.

DIGESTERS
2—14' Globe Rotary Digesters.

DRIVES
1—Jones Reducer 75 h.p.—30.8 to 1.
1—#6½ Reeves Drive.
1—#4 Reeves Drive
1—Reliance Electric Drive, complete with 5 gear head motors.

DRYERS
1—Complete unit, consisting of 6 dryers, 36" diameter x 38" face, including frames, gears, anti-friction bearings.
7—24" diameter x 48" face.
1—36" diameter x 143" face.
3—36" diameter x 74" face.
1—48" diameter x 70" face.
2—Dryers 48" diameter x 134" face.
1—24" diameter x 92½" face.
2—28" diameter x 48" face.
1—36" diameter x 67" face.
1—54" diameter x 48" face.
3—48" diameter x 88" face, with bearings and gears.
1—36" diameter x 90" face.
2—36" diameter x 120" face.
9—36" diameter x 76" face.
1—48" diameter x 144" face.
5—28" diameter x 77" face.

FLAT SCREENS
2—12 plate Flat Screens.

FOURDRINIER PARTS FOR 134" MACHINE
6—Suction Boxes, 23 table rolls. Brass Slide Rails.

GEARS
30 gears, for 36" diameter Dryers, 108 teeth 3¼" face.

GRINDERS
2—4 pocket Grinders.
2—3 pocket Grinders.

GUILLOTINE CUTTER
1—60" Cutter.

JORDANS
2—#1 Jones High Speed Jordans, with 75 h.p. motors, new 1948.
4—Noble & Wood Mammoth.
1—#4 Hercules.
1—#2 Emerson anti friction bearing.
1—#1 Emerson.

LIME SLUDGE FILTERS
2—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.

MOTORS
Write us regarding your requirements.

PRESSES
3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.

PULLEYS
Various cone and assorted pulleys.

PULPERS
1—Jones Pulper, Complete with motor and drive.
1—Noble & Wood Pulper—Iron Tub.
1—Lannoye Pulper.

PUMPS
1—Gould Triplex Hydraulic Pump, 2 x 6, 1750# pressure.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.
3—Shartle Brothers circulating pumps, each 4,000 g.p.m.
1—Frederick, 8 x 12, with motor.
1—Shartle, 8 x 14, 2000 g.p.m., 62' head, direct connected to circulating pump, with motor.

REELS
1—123"—3 bowl Revolving Reel.
1—72" Dowingtown Reel, 2 bowl.

REFINERS
1—134"—2 drum.
2—#1 Claflin Refiners.

ROLLS
3—Rubber Cover Press Rolls, 76" face x 18½" diameter. Plastometer 25.
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
2—#2 Bird—Copper vats—complete.
1—#2A Bird—Copper vats—complete.

SAVEALLS
1—#5 Bird Saveall.
2—Savealls, 36" diameter x 136" face cyl inder molds, iron end vats
1—Pusey & Jones 42" x 146" Saveall.

SHAKER ROLLS
1—134" face x 14" diameter with Messenger bearings.
1—104" face x 14" diameter with Messenger bearings.

SHEETERS
1—48" Hamblet Sheeter.
1—122" Horne Sheeter.

SHREDDERS
2—Daniels Rag Cutters.

SLITTERS & WINDERS
1—120" 4 drum Moore & White.
1—115" 2 drum Waldron
1—104" Beloit two drum winder.
1—102" Moore & White 4 drum winder.
1—72" Cameron—Type 8-10.
1—72" Cameron—Type 10.
1—45" Knowlton Slitter.
1—42" Cameron Type 40-1-AF
1—42" Cameron—Type 6.
1—42" Cameron Constant Tension with pneumatic control.
1—84" Langston Slitter.
1—108' Sandy Hill Winder.
2—84"—4 drum Moore & White.
2—62" Cameron—Type 10.
2—26" Cameron—Type 24-2A.

STEAM JOINTS
30—Beloit Steam Joints.

STOCK PUMPS
1—10 x 20 Shartle Duplex.
1—7 x 16 Shartle Duplex.
2—10 x 10 Beloit Duplex, low type.
Advise as to your requirements.

SUCTION BOXES
5—136" face Suction Boxes.
6—140" face.

SUCTION PRESS ROLLS
1—Sandusky Suction Press Roll 130" drilled face x 14⅞" diameter.
1—Sandusky Suction Press Roll 102" drilled face x 14⅞" diameter.

TABLE ROLLS
Write us regarding your requirements.

THICKENERS
1—Pulp Thickener, cylinder mold 48" x 117", with spare cylinder mold.
1—Thickener (Decker) 36 x 96 mold.

TOILET WINDERS
2—72" Hudson-Sharp (Surface type winder).
4—81" Deitz.
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1—36" Acme.
1—84" Smith & Winchester Undercut.

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1—N-82 Nash, for Fulton-Midwest System.

WET MACHINE
1—72" Wet Machine.

YANKEE DRYERS
1—48" Face x 84" Diameter, Frames & bearings.

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FOR SALE

FOR SALE—70" trim Fourdrinier paper machine shut down one week, including four Valley Iron Works beaters, four washers with cast iron tubs, 1 Jones Majestic Jordan with ⅞" stainless steel filling, 2 duplex stock pumps, 2 Leith Walk screens, chrome plated, 3 Vortraps plus auxiliary. Fourdrinier wire 84" x 55 ft. 2 presses 17" dia. rolls, smoothing press, 21 dryers 36" x 80" with Ross Grewing air system, 6 roll calender, M. & W. two drum winder, size press, drum reel, available with drive and pumps. Can be inspected in present location. FRANK H. DAVIS COMPANY, 175 Richdale Ave., Cambridge, 40, Massachusetts. O-31

FOR SALE—3 Strand Paper Converting Embossed quarter fold Napkin Machines. Perfect condition. Reasonable. Address Box 52-445 care Paper Trade Journal. O-17

WANTED

WANTED

One 120" super calender stack suitable for 1000 F.P.M. Advise price, location and condition. Box No 52-422. Care Paper Trade Journal.

O-17

WANTED—One 10 x 10 variable speed steam engine. Address STOCKPORT PAPER CORP., Stockport, N. Y. O-17

WANTED—Second hand Schopper Folding Tester in good condition. Address Box 52-434 care Paper Trade Journal. O-17

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LARGE PULP MILL MACHINERY MANUFACTURERS INTERESTED IN THE MANUFACTURE AND THE SALE OF NEW AND IMPROVED PULP MILL MACHINERY. WILL DO DEVELOPMENT WORK ON ATTRACTIVE DESIGNS. THIS IS AN OPPORTUNITY TO HAVE YOUR MACHINERY BUILT AND SOLD BY AN AGGRESSIVE, SUCCESSFUL ORGANIZATION HAVING COMPLETE PERSONAL CONTACT SALES COVERAGE OF THE PULP AND PAPER INDUSTRY. ADDRESS BOX 52-435 CARE PAPER TRADE JOURNAL. O-17

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INCREASE CANADIAN SALES

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Address Box 52-443 care Paper Trade Journal
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GLIDDEN * ALPHA PROTEIN

This is the pure Soya Protein that does so many jobs better in the paper industry.

***GLIDDEN ALPHA* PROTEIN** *was the first pure protein chemically isolated from the soybean ever to be produced on a commercial scale for industrial use. Today, in the paper industry alone, it is performing a variety of important jobs better—often more economically, too.*

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Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B F. Goodrich Chemical Co.
Gottesman & Co.
Hercules Powder Co.
Heyden Chemical Corp.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Midwest Fulton Mch. Co.
The Noble & Wood Machine Co.
Shartle Bros. Mch. Co.

CHUCKS
Efficiency Engrg. Co.

CLEANING MACHINES
Hydro-Silica Corp.

CLEANING MATERIALS
American Cyanamid Company Industrial Chemicals Division
Diamond Alkali Co.
The Dow Chemical Company
E. I du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

CLOTH
Lindsay Wire Weaving Co.

CLUTCHES
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dodge Mfg. Corp.
Farrel-Birmingham Co.
Hudson-Sharp Mch. Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Cyanamid Company Industrial Chemicals Division
The Dow Chemical Co.
E. I. du Pont de Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Plaskon Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
Nash Engineering Co.
Roots-Connersville Blower Corp

CONDENSATE FILTERS
Hungerford & Terry. Inc.
The Permutit Company

CONDENSERS
Biggs Boiler Works Co.
Midwest Fulton Mch. Co.

CONDITIONING
Vap Systems Co.

CONTRACTORS
Meyer & Sons Co.

CONSISTENCY REGULATORS
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Pandia, Inc.
Trimbey Machine Works

CONSULTING ENGINEERS
Ebasco Services
Frank W. Egan & Co.
Ferguson, H. K., Company
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
O'Donoghue, Roderick
The Rust Engrg. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.

CONTINUOUS DIGESTER
Pandia, Inc.

CONTROLLERS
Black Clawson Company
The Brown Instrument Co.

CONTROLS
The Brown Instrument Co.
Johnson Corp.
Poirier Control Co.
Shartle Bros. Mch. Co.
Westinghouse Electric Corp.

CONVERTING MACHINERY
The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works

CONVEYORS
Black Clawson Company
Jeffrey Mfg. Co.
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

CORES
Elixman Paper Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

COUCH ROLLS
Beloit Iron Works
Improved Paper Machinery Co.
Manchester Machine Co.

COUPLINGS
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Dodge Mfg. Corp.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

CRANES
Reading Crane & Hoist Corp.
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Dusenbery Co., Inc.
Gibbs-Brower Company, Inc.
Graphic Arts International Corp.
Thomas W. Hall Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg. Co.
Taylor, Stiles & Co.

CYLINDER MOULDS
Black-Clawson Co.
Hayden Wire Works Inc.
Improved Paper Machinery Corp.
Manchester Machine Co.
Rice Barton Corporation
Sinclair Company

CYLINDERS
Biggs Boiler Works Co.
M. W. Jenkins Sons, Inc.

CYLINDER WIRES
Hayden Wire Works Inc.
Wisconsin Wire Works

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DANDY ROLLS
Plank Company

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DEFOAMERS
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.

DE-INKING
Bird Machine Co.
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Rice Barton Research Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DEINKING CHEMICALS
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
Amalgamated Chemical Corp.
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTER CIRCULATING SYSTEMS
Fibre Making Processes, Inc.

DIGESTERS
Babcock & Wilcox Co.
Biggs Boiler Works Co.
Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lukenweld
Pandia, Inc.
Paper & Industrial Appliances
Pusey & Jones Corp.

DISPERSING AGENTS
Calgon, Inc
Diamond Alkali Co.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
The Bagley & Sewall Company
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell United Co.
Lodding Engineering Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
The Bagley & Sewall Company
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
Westinghouse Electric Corp.

DRIERS
The Bagley & Sewall Company
Beloit Iron Works
Biggs Boiler Works Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRIERS—LABORATORY
The Noble & Wood Machine Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dodge Mfg. Corp.
Downingtown Mfg. Co
Farrel-Birmingham Co.
Jeffrey Mfg. Co.
General Electric Company
Gibbs-Brower Company, Inc.
Manchester Machine Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.

DRUM WINDERS
Manchester Machine Co
Rice Barton Corporation

DRYER ROLL PYROMETER
Midwest Fulton Mch. Co.
Thwing-Albert Instrument Co

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co
John Waldron Corp.

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Egan, Frank W., & Co.
John Waldron Corp.

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Gibbs-Brower Company, Inc.
Holyoke Machine Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

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Raymond, Chas. P., Service, Inc.

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Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Biggs Boiler Works Co.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.
Westinghouse Electric Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O
Westinghouse Electric Corp.

FEEDERS
Jeffrey Mfg. Co.
Merrick Scale Mfg. Co
The Permutit Company

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
The Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FIBRE BOARD MACHINES
The Noble & Wood Machine Co.

FILLERS
American Cyanamid Company, Industrial Chemicals Division
J. M. Huber Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
R. P. Adams Co., Inc.
Bird Machine Company
Holyoke Machine Co.
Hungerford & Terry, Inc.
Improved Paper Machinery Corp.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Grinnell Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Dodge Manufacturing Corp.
Egan, Frank W., & Co.
Jeffrey Mfg. Co.
John Waldron Corp.
Westinghouse Electric Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES
Biggs Boiler Works Co.
Lukens Steel Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Elwell Parker Elec. Co.
Towmotor Corp.

FORMATION TESTERS
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

FOURDRINIERS
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Manchester Machine Co.
The Moore & White Co.
Noble & Wood Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

GASKETS
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

GEAR REDUCERS
Dodge Mfg. Corp.

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRAVITY FILTERS
Holyoke Machine Co.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Hanchett Mfg. Co.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company
Simonds Abrasive Co.

GUIDES
The Bagley & Sewall Company
Beloit Iron Works
Black-Clawson Co.
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works
Waldron, John, Corp.

GUMS
Hercules Powder Co., Inc.
National Starch Products, Inc

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Westinghouse Electric Corp

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Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Ross, J. O., Engrg. Corp.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOISTS
Reading Crane & Hoist Corp.

HOSE (Air, Water, Suction, etc.)
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The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TIRES
B. F. Goodrich Co.

INDUSTRIAL TRACTORS
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Black-Clawson Co.
Brown Instrument Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Tracerlab, Inc.
A. van der Korput
Williams Apparatus Co.
Westinghouse Electric Corp.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Cram Associates
Johnson Corp.
Rice Barton Corporation
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KILNS
F. L. Smidth

KNIVES
Black Clawson Company
Bolton & Sons, Inc.
Dilts Machine Works, Inc.
Dusenbery Co., Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
The Moore & White Co.
The Noble & Wood Machine Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
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KNOTTERS
Black-Clawson Co.
Fibre Making Processes, Inc.
Improved Paper Machinery Corp.

LABORATORY CORRUGATOR
The Noble & Wood Machine Co.
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
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Bauer Brothers Co.
Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LINTER COTTON
Hercules Powder Co., Inc.
Railway Supply & Mfg. Co.

LINTER PULP
Hercules Powder Co., Inc.

LUBRICANTS
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Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
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MAGAZINE REELS
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MATERIALS HANDLING
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Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

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Lobdell Co.
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Sun Oil Company

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Williams Apparatus Co., Inc.

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Hart-Moisture-Meters

MOTORS
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MOTORS AND GENERATORS
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General Electric Company
Reliance Electric & Engrg. Co.
Westinghouse Electric Corp.

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The International Nickel Co.

NOZZLES
Spray Engrg. Co.

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The Moore & White Co.
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Black-Clawson Co.
Manchester Machine Co.
Rice Barton Corporation
Westinghouse Electric Corp.

PAPER MACHINES
The Bagley & Sewall Company
Beloit Iron Works
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Manchester Machine Co.
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINES—LABORATORY
The Noble & Wood Machine Co

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

PARAFFINE WAXES
Sun Oil Company

PARAFFIN WAX EMULSIONS
American Cyanamid Co., Ind. Chem. Div.
Hercules Powder Co., Inc.
Nopco Chemical Co.

PASTING MACHINES
Beloit Iron Works
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
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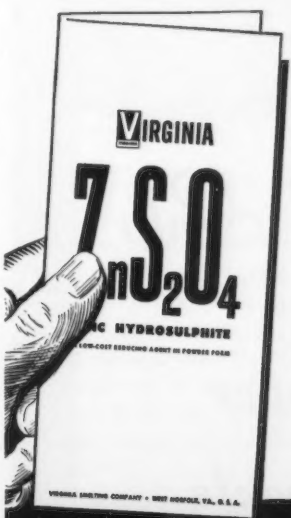

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Biggs Boiler Works Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

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Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

PITCH CONTROL
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company, Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Rohm & Haas Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
Lukenweld Division
Lukens Steel Company
J. O. Ross Engrg. Corp.
Timken Roller Bearing Co.

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Black Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
Black-Clawson Co.
Egan, Frank W., & Co.
Manchester Machine Co.
Rice Barton Corporation

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

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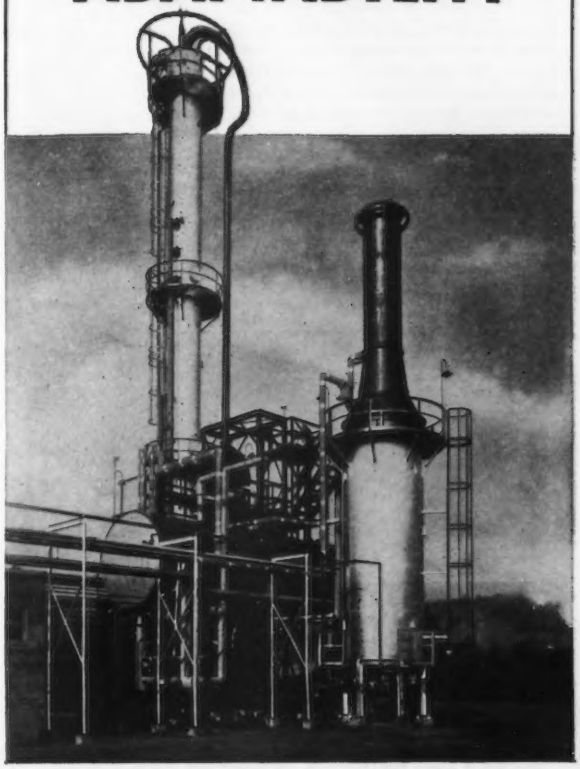

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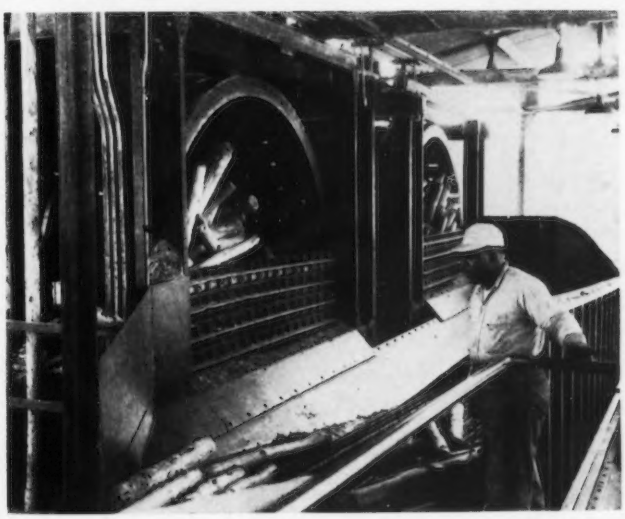

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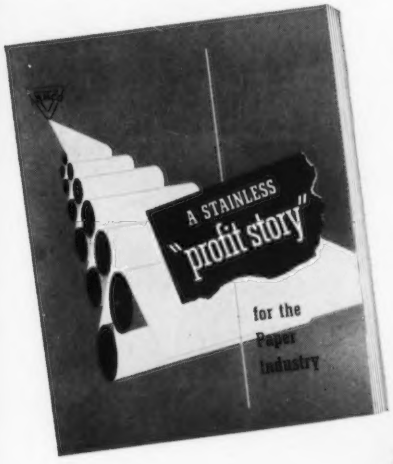

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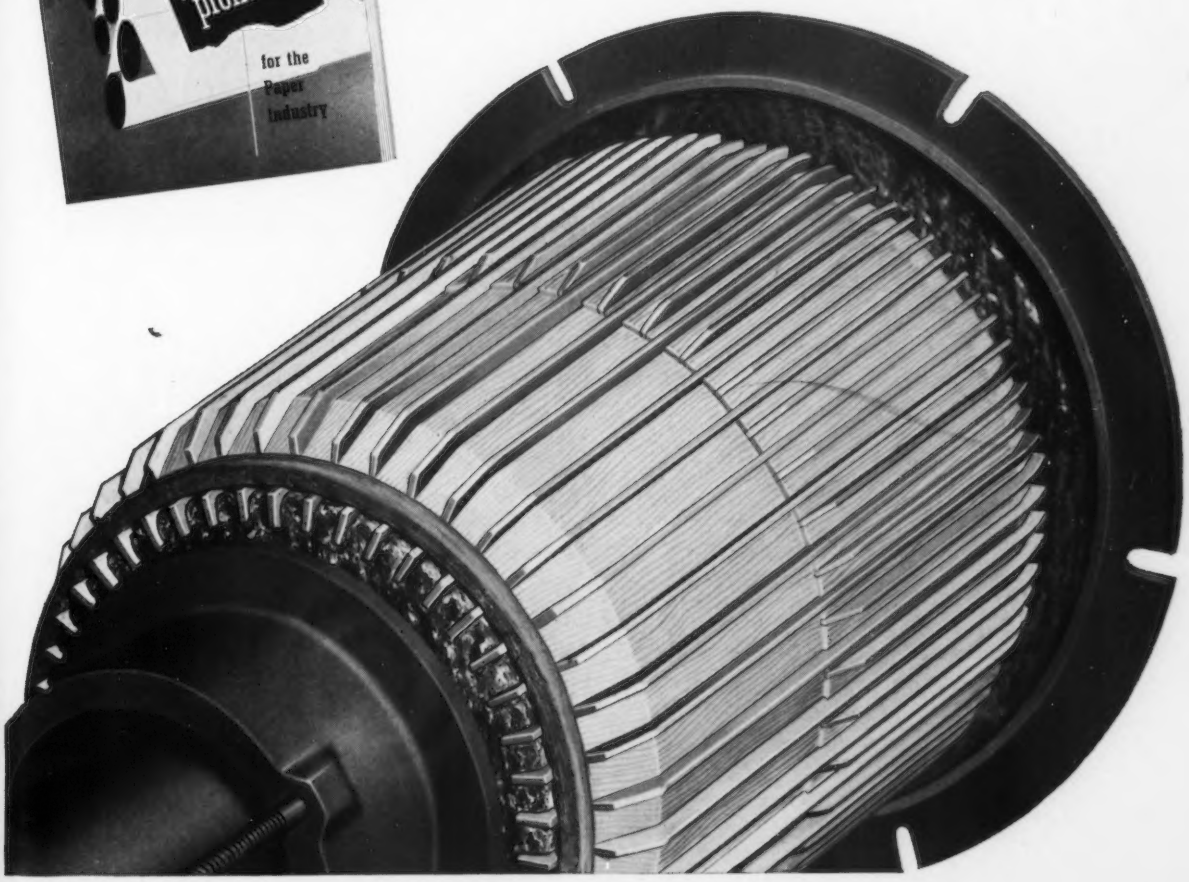

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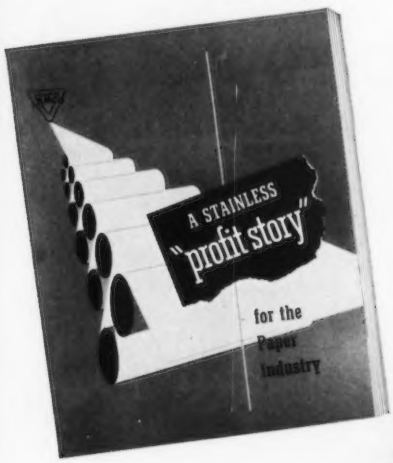

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